Kali-TRANSHUMAN ANARCHO JOURNAL OF RADICAL Possibilities

Phaneinthymos

Kali-TRANSHUMAN

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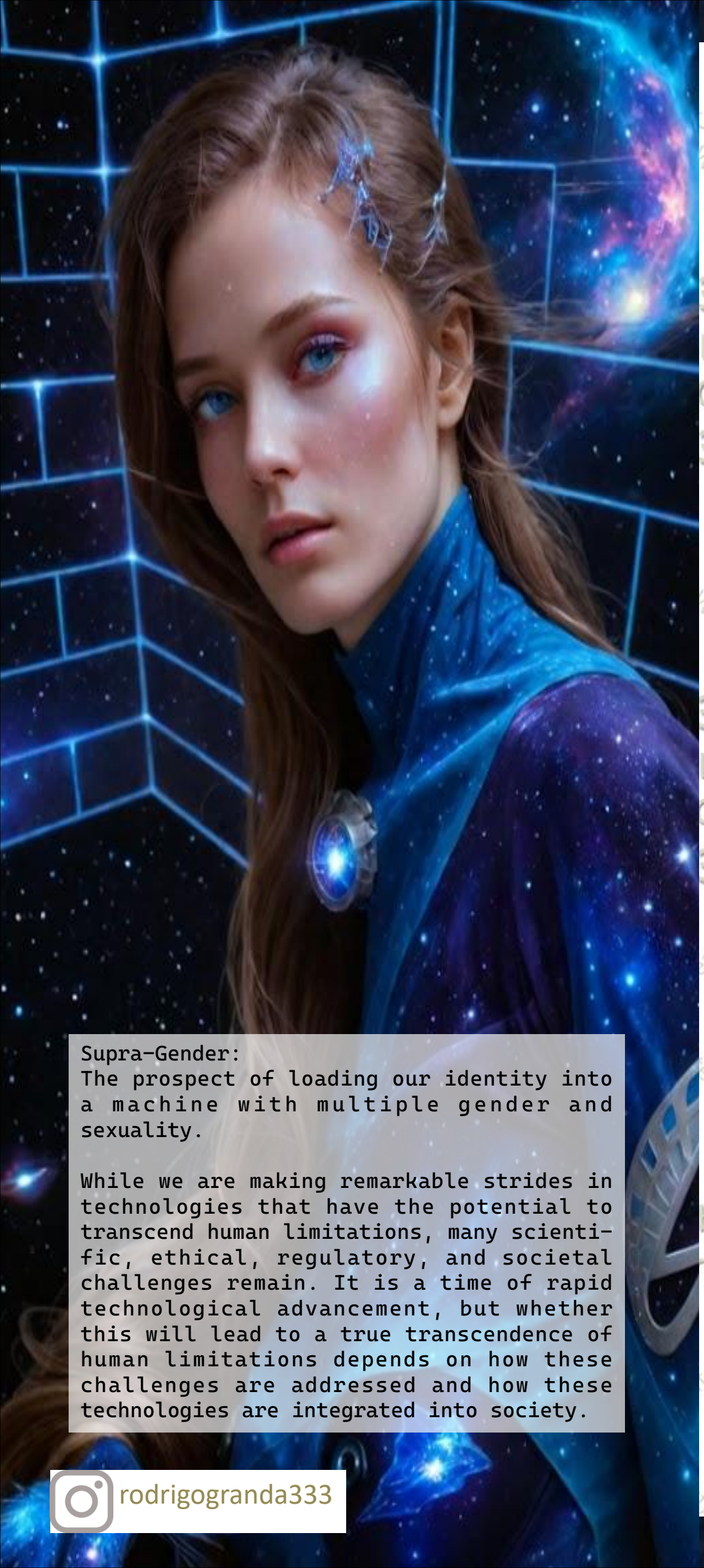
Supra-Gender

The prospect of loading our identity into a machine with multiple gender and sexuality.

Epoch 0, Volume 0
September 23, 2023

Phaneinthymos



Supra-Gender:
The prospect of loading our identity into a machine with multiple gender and sexuality.

While we are making remarkable strides in technologies that have the potential to transcend human limitations, many scientific, ethical, regulatory, and societal challenges remain. It is a time of rapid technological advancement, but whether this will lead to a true transcendence of human limitations depends on how these challenges are addressed and how these technologies are integrated into society.

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Regarding my Seven digital publication: | continue with the postmodernist sequence of mass distribution, inherited from the printing press to upload —my Apple of knowledge—, in the branch of free knowledge, without an editorial review. Trying to influence the collective imagination of societies that are no longer surprised by anything. Phaneinthymos Media Group Inc. Phanerothyme Mexico City, Mexico 2024.
Rodrigo Granda.
Saturday, September 23, 2023

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“To reveal mind and soul”
Author: Rodrigo Granda
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The golden presence and ethereal

BEAUTY OF HEATHER FONTAINE!

When it comes to your basic blonde, drop dead beauty, Ms. Fontaine has got the contest sowed up, lets face it darlings, you rarely see this combination, a true movie star face and the perfect sex kitten figure!

Heather Fontaine is an entertainer out of Saint Petersburg, Florida. She has also lived in Tampa, Florida and Honolulu, Hawaii. Heather has performed at the world famous Queen Mary in Southern California. Along with her numerous titles she has been featured on television specials.

*This publication is inspired by the struggle of transgender women to achieve the genetic modification that will preserve humanity. Thanks to the transgender women who have accompanied me throughout my life, giving me love and understanding, especially since I have a motor disability.

0._ The Myth of the Androgyne

The story of the Androgyne, as recounted by Plato in "The Banquet" (or "The Symposium"), is a compelling myth that delves into the origins of human love and longing. Here's a more detailed exploration of the myth and its implications:

The Myth of the Androgyne

In "The Banquet," various characters deliver speeches on the nature of love. Aristophanes, a comic playwright, provides one of the most memorable and imaginative accounts. According to his story:

1. **Original Beings:** In the beginning, humans were spherical creatures with four arms, four legs, two faces on a single head, and other doubled features. These beings were of three types:
   - **Male:** Descended from the sun.
   - **Female:** Descended from the earth.
   - **Androgynous:** A combination of both male and female, descended from the moon.
2. **Power and Hubris:** These original humans were powerful and ambitious, leading them to challenge the gods. To curb their hubris and weaken them, Zeus decided to split them in half.
3. **Separation by Zeus:** Zeus used a lightning bolt to divide each being into two, resulting in humans as we are today, with just two arms, two legs, and one face.
4. **Eternal Longing:** After being split, each half longed for its other half, leading to a perpetual search for wholeness. This longing for unity is what Aristophanes describes as the essence of love – a desire to find and reunite with our missing half to restore our original nature.

Symbolic Meaning

The myth of the Androgyne carries profound symbolic significance:

1. **Nature of Love:** Love is depicted as an innate human drive to seek out our other half and achieve completeness. It suggests that our souls are fundamentally incomplete and that finding our counterpart brings a sense of fulfillment and unity.
2. **Duality and Unity:** The story reflects the idea of duality in human nature – the presence of both masculine and feminine aspects within each person. The androgynous being symbolizes a perfect balance and harmony of these traits.
3. **Human Condition:** The myth speaks to the human condition of feeling incomplete or lost without connection and love. It underscores the idea that relationships and bonds are essential to our sense of identity and well-being.

Cultural and Philosophical Impact

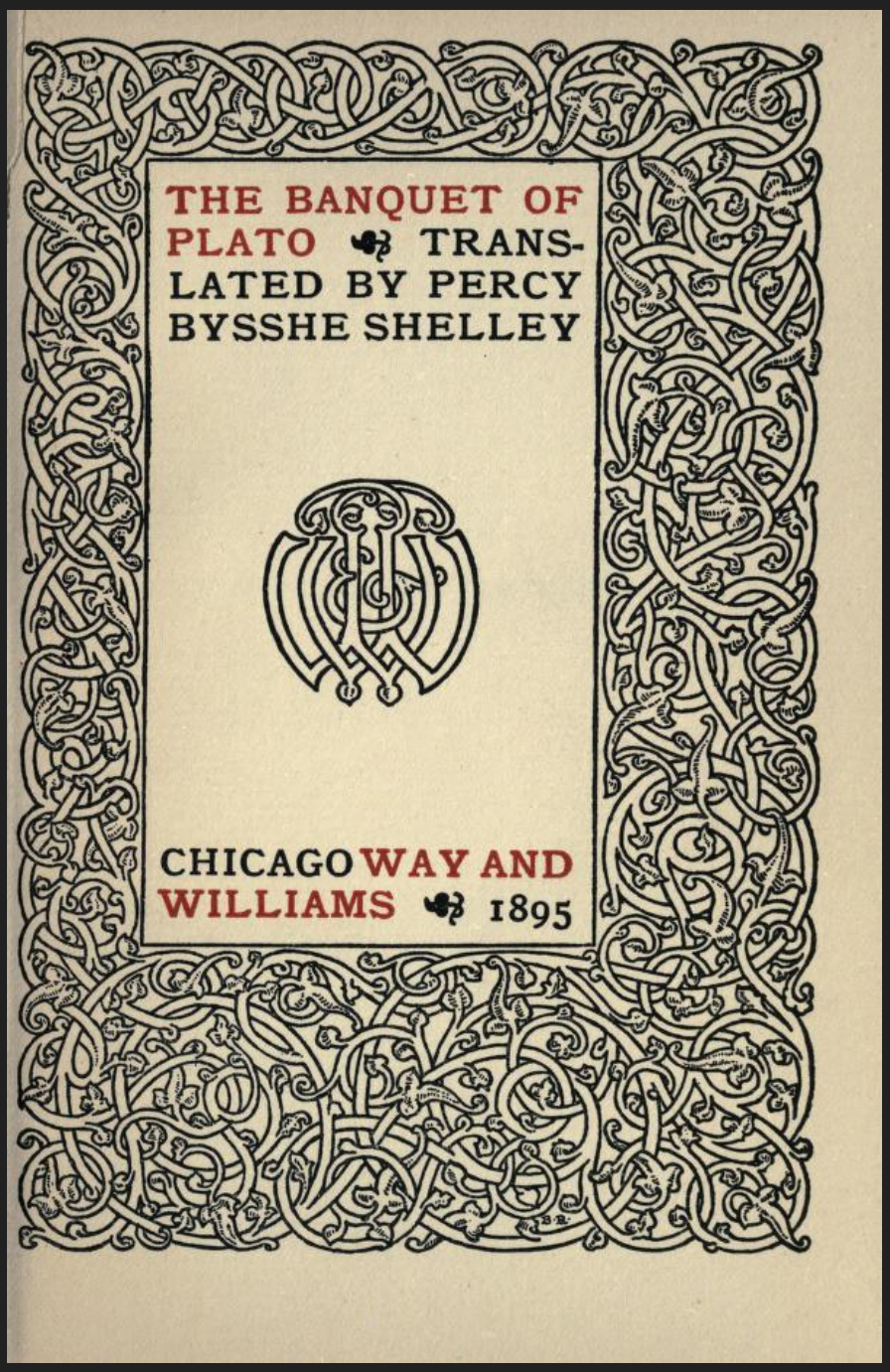
Plato's myth has had a lasting impact on Western thought and literature, influencing concepts of love, identity, and gender. It resonates with contemporary discussions about gender fluidity, the nature of human relationships, and the search for personal fulfillment.

Reflection

The tale of the Androgyne invites reflection on several themes:

- **Completeness and Identity:** How do our relationships shape our sense of self and completeness?
- **Balance and Integration:** What can we learn from the notion of integrating different aspects of our identity to achieve harmony?
- **Universal Longing:** How does the universal longing for connection influence human behavior and society?

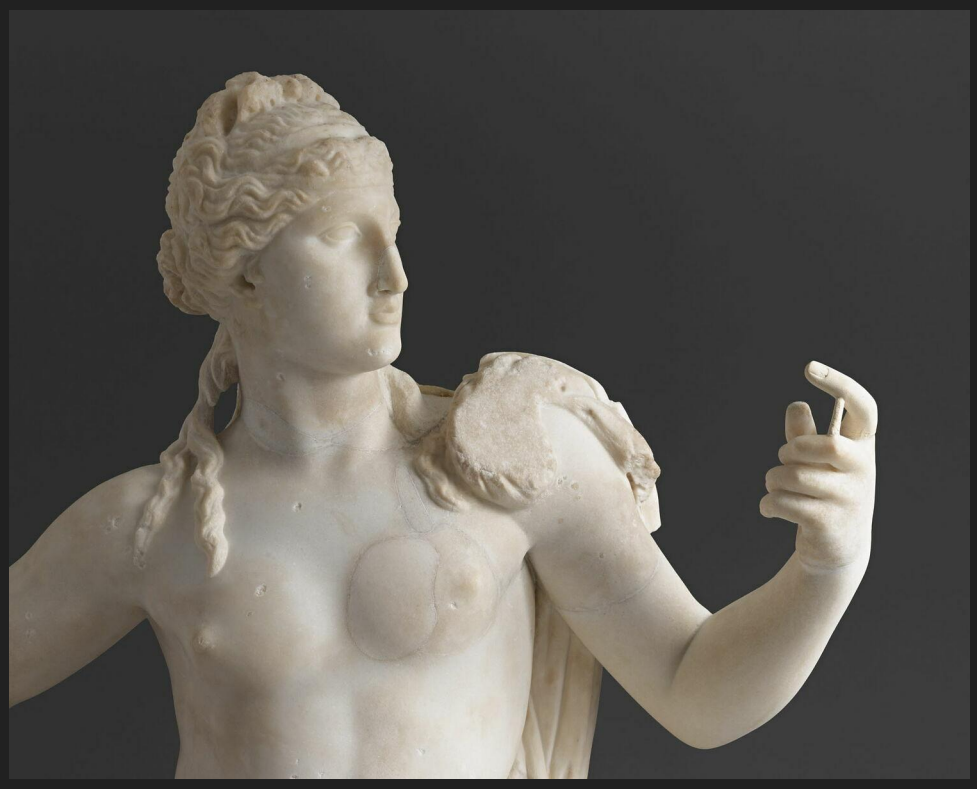
In conclusion, Plato's story of the Androgyne from "The Banquet" is a rich allegory that explores the depths of human love and the quest for wholeness. It remains a timeless narrative that continues to inspire and provoke thought about the fundamental aspects of human existence.

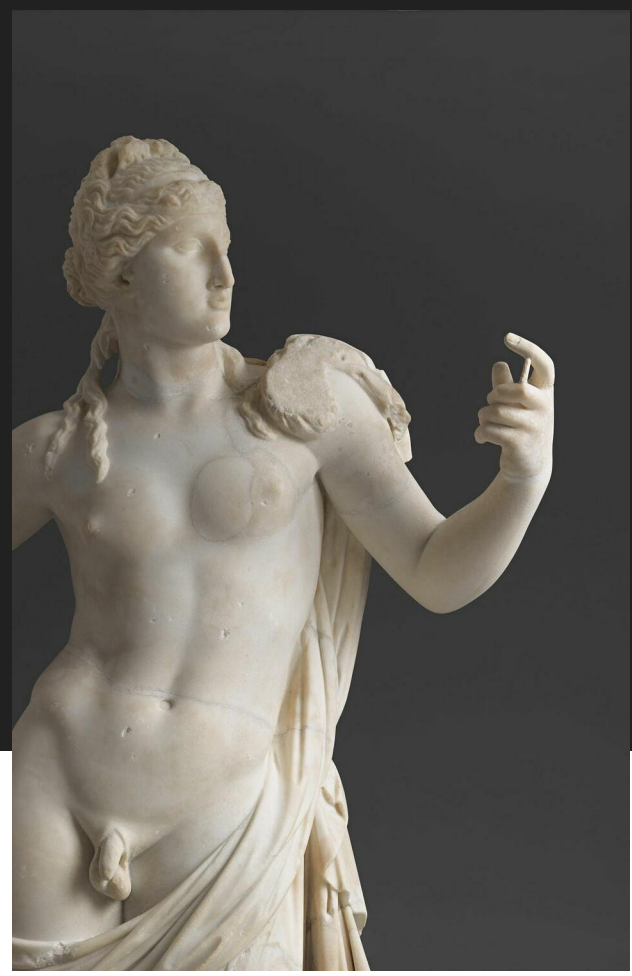


1.Plato, Shelley PB, Rogers B. *The Banquet of Plato*. Way and Williams; 1895.

beings were formerly not divided into two sexes, male and female; there was also a third, common to both the others, the name of which remains, though the sex itself has disappeared. The androgynous sex, both in appearance and in name, was common both to male and female; its name alone remains, which labours under a reproach.

"At the period to which I refer, the form of every human being was round, the back and the sides being circularly joined, and each had four arms and as many legs; two faces fixed upon a round neck, exactly like each other; one head between the two faces; four ears, and everything else as from such proportions it is easy to conjecture. Man walked upright as now, in whatever direction he pleased; but when he wished to go fast he made use of all his eight limbs, and proceeded in a rapid motion by rolling circularly round,—like tumblers, who, with their legs in the air, tumble round and round. We account for the production of three sexes by supposing that, at the beginning, the





DESCRIPTION

Object name/Title	Name: statue
Original artwork	Standing hermaphrodite; Pergamenian workshop; 2nd century av. (?)
Description/Features	composite work; God ; Dionysus (head, hair, headband, bun of curls, remains, mitra); Hermaphrodite (half-naked, himation, half-draped)

Condition of the work: the head is a modern assembly. The statue in two pieces is glued back together at the waist. The nose, the rear left part of the skull and the neck, the missing strands to the right of the neck were redone in marble. The upper left part of the back, the left flank and arm with drapery, the right forearm with the remains of the fingers on the hip, the lower part of the statue starting from the lacunar calves were completed in marble. The drapery in the back under the piece has been recut. Many bursts have been completed.

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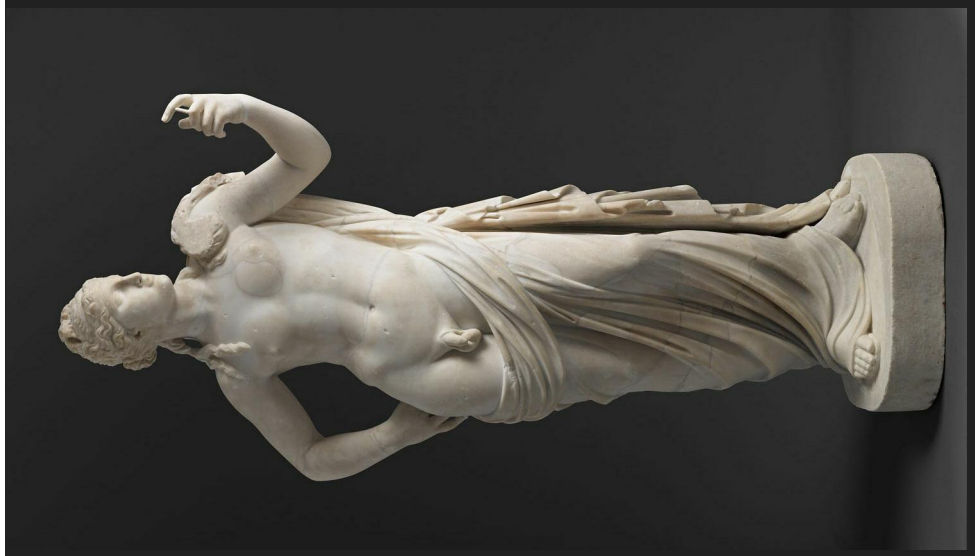

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“Cat Satisfaction”. Supra-Gender, ———series for this issue.
Photo by: Rodrigo Granda (artificial intelligence generated image)

1._ Adélaide Herculin Barbin

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Adélaïde Herculine Barbin, often referred to simply as Herculine Barbin, was a 19th-century French intersex person whose memoirs provide a rare and valuable insight into the experiences of intersex individuals during that period. Here's a detailed look at Herculine Barbin's life and significance:

Early Life

- **Birth:** Adélaïde Herculine Barbin was born in 1838 in France. Assigned female at birth, Herculine was raised and socialized as a girl.
- **Education:** Barbin attended a convent school and later trained to become a teacher, a profession traditionally dominated by women at the time.

Discovery of Intersex Traits

- **Physical Anomalies:** As Barbin matured, she began to experience physical developments that did not align with typical female development. These changes included the growth of facial hair and an increase in body strength.
- **Medical Examination:** In early adulthood, Barbin's physical anomalies led to medical examinations, revealing that she had male genitalia and other male characteristics, alongside ambiguous genitalia.

Identity and Legal Reclassification

- **Identity Struggle:** Barbin's memoirs reveal the emotional and psychological struggles of living with an intersex condition, especially in a society with rigid gender norms.
- **Legal Reclassification:** Following the medical examination, Barbin's legal gender was reclassified as male. This transition was a traumatic and confusing period, as it involved not only a shift in legal identity but also in social and personal identity.

Later Life and Death

- **Isolation and Depression:** Barbin's life as a man was marked by isolation and depression. The societal rejection and personal turmoil proved overwhelming.
- **Death:** Tragically, Herculine Barbin died by suicide in 1868 at the age of 30. The discovery of Barbin's body also led to the finding of her memoirs, which were later published.

Memoirs

- **Publication:** Barbin's memoirs, originally written in French, were published posthumously. The most well-known edition was published in 1980 by Michel Foucault under the title "Herculine Barbin: Being the Recently Discovered Memoirs of a Nineteenth-century French Hermaphrodite."
- **Significance:** These memoirs provide a deeply personal account of the lived experience of an intersex person in the 19th century. They offer invaluable insights into the challenges of living with an intersex condition in a society with strict binary gender norms.

Cultural and Historical Impact

- **Intersex Awareness:** Barbin's story has become a significant reference in discussions about intersex conditions and the social and medical treatment of intersex individuals.
- **Gender Studies:** The memoirs are frequently cited in gender studies and queer theory, highlighting the complexities of gender identity and the impact of societal norms on personal identity.

Reflection

Herculine Barbin's life story underscores the profound impact of societal expectations and medical interventions on intersex individuals. Her memoirs continue to be a poignant reminder of the importance of understanding and compassion in the treatment of gender diversity.

In summary, Adélaïde Herculine Barbin's life and memoirs provide a crucial historical perspective on the experiences of intersex individuals, contributing to ongoing discussions about gender identity, medical ethics, and human rights.

In 1976, the eminent philosopher Michel Foucault encountered a work written by the 19th century forensic scientist, Auguste Ambroise Tardieu, in the archives of the French Department of Public Hygiene. Tardieu's Question médico-légale de l'identité (1872) discusses the role of forensic science in the assignment of sex. The second edition of the book, which consists of fragments from the memoirs of Herculine Barbin, an intersex person (known as "hermaphrodite" at the time), was published in 1874, accompanied by the full text of Barbin's handwritten memoirs. In the wake of his discovery of Tardieu's work and Herculine's memoir, Foucault edited the book, Herculine Barbin, dite Al exina B., consisting of the medico-legal documents, results of medical examinations, court documents, and press reports pertaining to Barbin's life in 1978. Two years later, when Foucault wrote an introduction to the book that was translated into English, Herculine's life reached a larger audience. Today, hundreds of books and articles in various disciplines, notably in queer and gender studies, refer to Herculine Barbin's name.

QUESTION MÉDICO-LÉGALE

DE L'IDENTITÉ

DANS SES RAPPORTS

AVEC LES VICES DE CONFORMATION DES ORGANES SEXUELS

CONTENANT

LES SOUVENIRS ET IMPRESSIONS D'UN INDIVIDU

DONT LE SEXE AVAIT ÉTÉ MÉCONNU

PAR

AMBROISE TARDIEU
Professeur de médecine légale à la Faculté de médecine

PARIS
LIBRAIRIE J.-B. BAILLIÈRE ET FILS
Rue Hautefeuille, 19, près du boulevard Saint-Germain
1872

— Le faitextraordinaire qui me reste à rapporter et qui servira d'épilogue à cette étude médico-légale des vices de conformation des organes sexuels, en formera en quelque sorte le complément psychologique. Il fournit en effet l'exemple le plus cruel et le plus douloureux des conséquences fatales que peut entraîner une erreur commise dès la naissance dans la constitution de l'état civil, et montre la victime d'une semblable erreur, après vingt ans passés sous les habits d'un sexe qui n'est pas le sien, aux prises avec une passion qui s'ignore elle-même, avertie enfin par l'explosion de ses sens, puis rendue à son véritable sexe en même temps qu'au sentiment réel de son infirmité physique, prenant la vie en dégoût et y mettant fin par le suicide.

Les combats et les agitations auxquels a été en proie cet être infortuné, il les a dépeintes lui-même dans des pages qu'aucune fiction romanesque ne surpasse en intérêt. Alors même que son récit ne porterait pas en lui un accent de vérité saisissante, nous avons, dans des pièces authentiques et officielles que j'y joindrai, la preuve qu'il est de la plus parfaite exactitude. Je n'hésite pas à le publier presque en entier, ne voulant pas laisser perdre le double et précieux enseignement qu'il renferme, d'une part au point de vue de l'influence qu'exerce sur les facultés affectives et sur les dispositions morales la malformation des organes sexuels, d'une autre part au point de vue de la gravité des conséquences individuelles et sociales que peut avoir une constatation erronée du sexe de l'enfant qui vient de naître.

HISTOIRE D'ALEXINA B.

Dans une des plus pauvres mansardes du quartier latin, au commencement de l'année 1868, un jeune homme se donnait la mort. Près du grabat où gisait son cadavre était placé un petit fourneau de terre qui ne contenait plus que

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des cendres, il était étendu sur le dos, en partie vêtu, la face cyanosée, la bouche laissant écouler une écume sanguinolente. M. le docteur Régnier, médecin de l'état civil et le commissaire de police du quartier, s'étant rendus au domicile de ce malheureux après avoir constaté le décès et aussi l'anomalie physique que présentaient certaines parties du corps, trouvèrent sur une table une lettre écrite par lui et adressée à sa mère dans laquelle il lui demandait pardon du chagrin qu'il allait lui causer en mettant fin à une vie que ses souffrances ne lui laissaient plus le courage de supporter. Outre cette lettre le jeune homme laissait un manuscrit dans lequel il racontait sa triste vie. Les pages qui vont suivre en sont textuellement extraites.

Mes souvenirs (1).

J'ai vingt cinq ans, et quoique jeune encore j'approche à n'en pas douter du terme fatal de mon existence.

J'ai beaucoup souffert, et j'ai souffert seul ! seul ! Abandonné de tous ! Ma place n'était pas marquée dans ce monde qui me fuyait, qui m'avait maudit. Pas un être vivant ne devait s'associer à cette immense douleur qui me prit au sortir de l'enfance, à cet âge où tout est beau, parce que tout est jeune et brillant d'avenir.

Cet âge n'a pas existé pour moi. J'avais dès cet âge un éloignement instinctif du monde comme si j'avais pu comprendre déjà que je devais y vivre étranger.

Soucieux (2) et rêveur mon front semblait s'affaisser sous

(1) Je reproduirai ici le manuscrit presque en entier et tel qu'il m'a été transmis. Je retrancherai seulement les passages qui allongent le récit sans ajouter à l'intérêt, mais partout je respecterai la forme qui a un cachet particulier de sincérité et d'émotion saisissantes. Je ferai remarquer que l'auteur a déguisé seulement les noms propres et les lieux; les faits et les impressions restent absolument vrais.

(2) Les mots imprimés ici en italique sont soulignés dans le manuscrit,

le poids de sombres mélancolies. J'étais *froide*, timide, et en quelque sorte insensible à toutes ces joies bruyantes et ingénues qui font épanouir un visage d'enfant.

J'aimais la solitude, cette compagne du malheur, et, lorsqu'un sourire bienveillant se levait sur moi j'en étais *heureuse* comme d'une faveur inespérée.

Comme mon enfance, une grande partie de ma jeunesse s'écoula dans le calme délicieux des maisons religieuses.

Des maisons véritablement pieuses, des cœurs droits et purs, présidèrent à mon éducation. J'ai vu de près ces sanctuaires bénis où s'écoulent tant d'existences qui, dans le monde, eussent été brillantes et enviées.

Les modestes vertus que j'ai vu briller n'ont pas peu contribué à me faire comprendre et aimer la religion vraie, celle du dévouement et de l'abnégation.

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Plus tard, au milieu des orages et des fautes de ma vie, ces souvenirs m'apparaissaient comme autant de visions célestes, et dont la vue fut pour moi un baume réparateur.

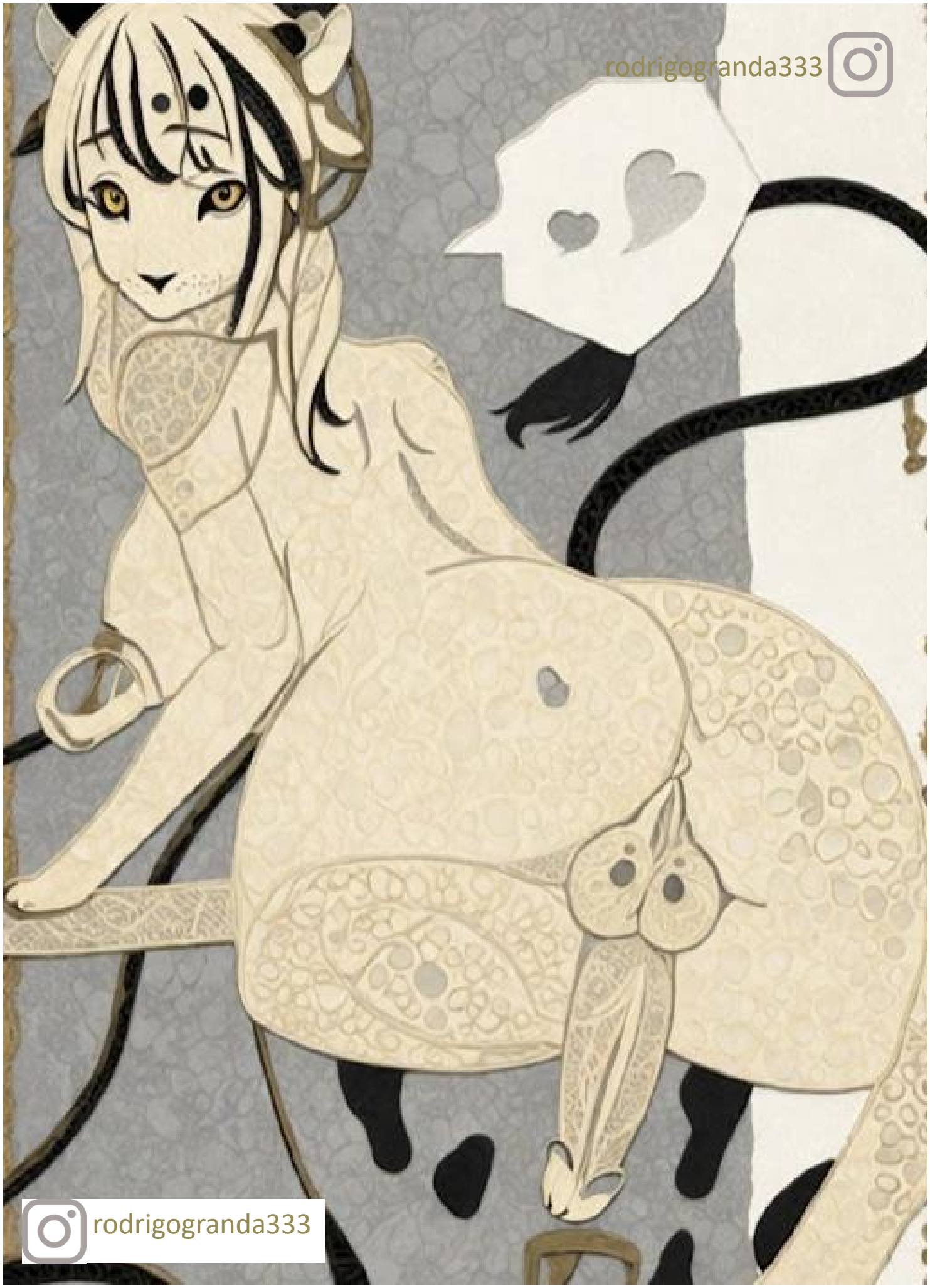
Mes seules distractions à cette époque furent les quelques jours que j'allais passer chaque année dans une noble famille, où ma mère était traitée en amie bien plus qu'en gouvernante. Le chef de cette famille était l'un de ces hommes mûris par les malheurs d'une époque sinistre et désastreuse.

La petite ville de L... où je suis *née* possédait et possède encore un hospice civil et militaire. Une partie de ce vaste établissement était affectée spécialement au traitement des malades des deux sexes, nombre toujours considérable auquel, comme je l'ai dit, venait se joindre celui non moins grand que fournissait la garnison de la ville.

L'autre partie de la maison appartenait tout entière à la jeunesse orpheline et abandonnée qu'une naissance, pres-

car l'auteur a mis une visible affectation à parler de lui tantôt au masculin, tantôt au féminin.

Question médico-légale de l'identité dans ses rapports avec les vices de conformation des organes sexuels : contenant les souvenirs et impressions d'un individu dont le sexe avait é...
Tardieu, Ambroise (1818-1879). Auteur du texte



“Girl with the big smile”. Supra-Gender, ——series for this issue.
Photo by: Rodrigo Granda (artificial intelligence generated image)

The publication "Hermaphroditism" by the Royal College of Surgeons of England, published in 1888, is a significant historical document that sheds light on the medical understanding and treatment of intersex conditions (historically referred to as hermaphroditism) during the late 19th century.

Historical Context

In the 19th century, the medical community had limited knowledge about intersex conditions. The term "hermaphroditism" was commonly used to describe individuals who exhibited both male and female physical characteristics. The understanding of gender and sex was primarily binary, and individuals who did not fit into these categories were often subjects of medical curiosity and study.

Key Topics Likely Covered

1. **Definitions and Classifications:** The publication would likely begin with defining hermaphroditism and classifying different types based on observable physical traits. This might include:
    - **True Hermaphroditism:** Individuals possessing both ovarian and testicular tissue.
    - **Pseudohermaphroditism:** Individuals whose external genitalia do not match their gonadal sex (testes or ovaries).
2. **Case Studies:** The document probably includes detailed case studies of individuals diagnosed with hermaphroditism, documenting their physical characteristics, medical examinations, and any surgical interventions or treatments attempted.
3. **Medical Examinations and Diagnoses:** Descriptions of the methods used by 19th-century physicians to examine and diagnose intersex conditions. This would involve physical examinations, anatomical studies, and possibly some early attempts at genetic or hormonal analysis.
4. **Surgical and Medical Interventions:** Discussions on the surgical techniques and medical treatments available at the time to address the physical aspects of hermaphroditism. These might include attempts to "correct" genitalia to conform to the binary gender norms.
5. **Ethical and Social Considerations:** Reflections on the social and ethical implications of treating individuals with intersex conditions, including the societal pressures to conform to gender norms and the psychological impact on the individuals.

Importance of the Publication

- **Medical History:** Provides insight into the historical medical perspectives and practices regarding intersex conditions. It shows how far the medical field has come in understanding and treating these conditions.
- **Social Context:** Reflects the societal attitudes towards gender and sex during the Victorian era, highlighting the challenges faced by individuals with intersex conditions.
- **Foundation for Modern Medicine:** Although outdated by today's standards, the publication forms part of the foundation upon which modern intersex studies and treatments have been built.

Modern Perspective

Today, the term "hermaphroditism" is considered outdated and stigmatizing. The preferred term is "intersex," which encompasses a wide variety of conditions where an individual's reproductive or sexual anatomy doesn't fit typical definitions of male or female. Modern medicine emphasizes the importance of a more nuanced and respectful approach to intersex individuals, focusing on their rights, consent, and psychological well-being.

Conclusion

"Hermaphroditism" by the Royal College of Surgeons of England (1888) is a historically significant publication that provides a glimpse into the medical and social understanding of intersex conditions in the late 19th century. It highlights the progress that has been made in the field and underscores the ongoing need for respectful and informed medical and social practices regarding intersex individuals.

HERMAPHRODISME. § 1. **Tératologie.** L'hermaphrodisme (ou plus exactement *hermaphroditisme*), au sens strict du mot, est la réunion des deux sexes sur un même individu. Cet état se trouve normalement chez la plupart des végétaux et dans certains groupes d'Invertébrés; il est dit *suffisant* lorsque l'hermaphrodite est capable de se féconder lui-même, *insuffisant* lorsque la fécondation exige l'accouplement réciproque de deux individus.

Parmi les Vertébrés, l'hermaphrodisme normal n'existe que chez quelques

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EXTRAIT

DU

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ARTICLE : Hermaphrodisme

PAR G. Herrmann

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"L'hermaphrodisme : sa nature, son origine, ses conséquences sociales" by Charles Marie Debierre, with the involvement of the Royal College of Surgeons of England, is a detailed study on hermaphroditism (now referred to as intersex conditions). This publication, originating in the late 19th and early 20th centuries, explores the medical, biological, and social aspects of intersex individuals.

Author and Context

- **Charles Marie Debierre (1853-1932):** A prominent French physician and professor known for his work in anatomy and surgery. His contributions to medical literature provided significant insights during his time.
- **Royal College of Surgeons of England:** A professional organization dedicated to promoting and advancing surgical practices. Its involvement indicates a serious medical investigation and validation of the work.

Key Topics Covered

1. **Nature of Hermaphroditism:**
    - **Definitions and Classifications:** Detailed descriptions of hermaphroditism, distinguishing between true hermaphrodites (those with both ovarian and testicular tissue) and pseudohermaphrodites (those with external genitalia not matching their gonadal sex).
    - **Anatomical Studies:** Examination of the physical characteristics of intersex individuals, using case studies and medical observations to document variations.
2. **Origin of Hermaphroditism:**
    - **Embryological Perspectives:** Discussion on the developmental origins of intersex conditions, including genetic, hormonal, and environmental factors that may contribute to atypical sexual development.
    - **Historical Theories:** Exploration of past theories and beliefs about the causes of hermaphroditism, reflecting the evolving understanding of human biology.
3. **Social Consequences:**
    - **Psychological Impact:** Analysis of the psychological and emotional challenges faced by intersex individuals due to societal norms and expectations.
    - **Social Stigma:** The stigma and discrimination experienced by intersex people, highlighting the need for greater understanding and acceptance.
    - **Legal and Ethical Considerations:** Examination of the legal status and rights of intersex individuals, and the ethical implications of medical and surgical interventions.

Significance of the Publication

- **Medical Advancement:** Debierre's work contributed to the medical field's understanding of intersex conditions, providing a foundation for future research and treatment approaches.
- **Historical Insight:** Offers a window into the medical and social attitudes toward intersex individuals in the late 19th and early 20th centuries, illustrating the progression of medical science and social perspectives.
- **Interdisciplinary Approach:** Combines medical, biological, and social sciences to provide a comprehensive view of hermaphroditism, underscoring the complexity of the issue.

Modern Perspective

Today, the approach to intersex conditions emphasizes respect for individual rights and informed consent. The term "hermaphroditism" is largely considered outdated and stigmatizing, with "intersex" being the preferred term. Modern medicine focuses on the well-being of intersex individuals, avoiding unnecessary medical interventions and promoting acceptance and understanding.

Conclusion

"L'hermaphrodisme : sa nature, son origine, ses conséquences sociales" by Charles Marie Debierre is a significant historical document that explores the multifaceted nature of intersex conditions. It reflects the medical knowledge and social attitudes of its time, providing valuable insights into the challenges and experiences of intersex individuals. This work remains an important reference for understanding the historical context of intersex studies and the evolution of medical and social approaches to gender diversity.

Mais les anomalies de développement (lisez arrêts de développement) mieux encore peut-être viennent attester l'hermaphrodisme primitif.

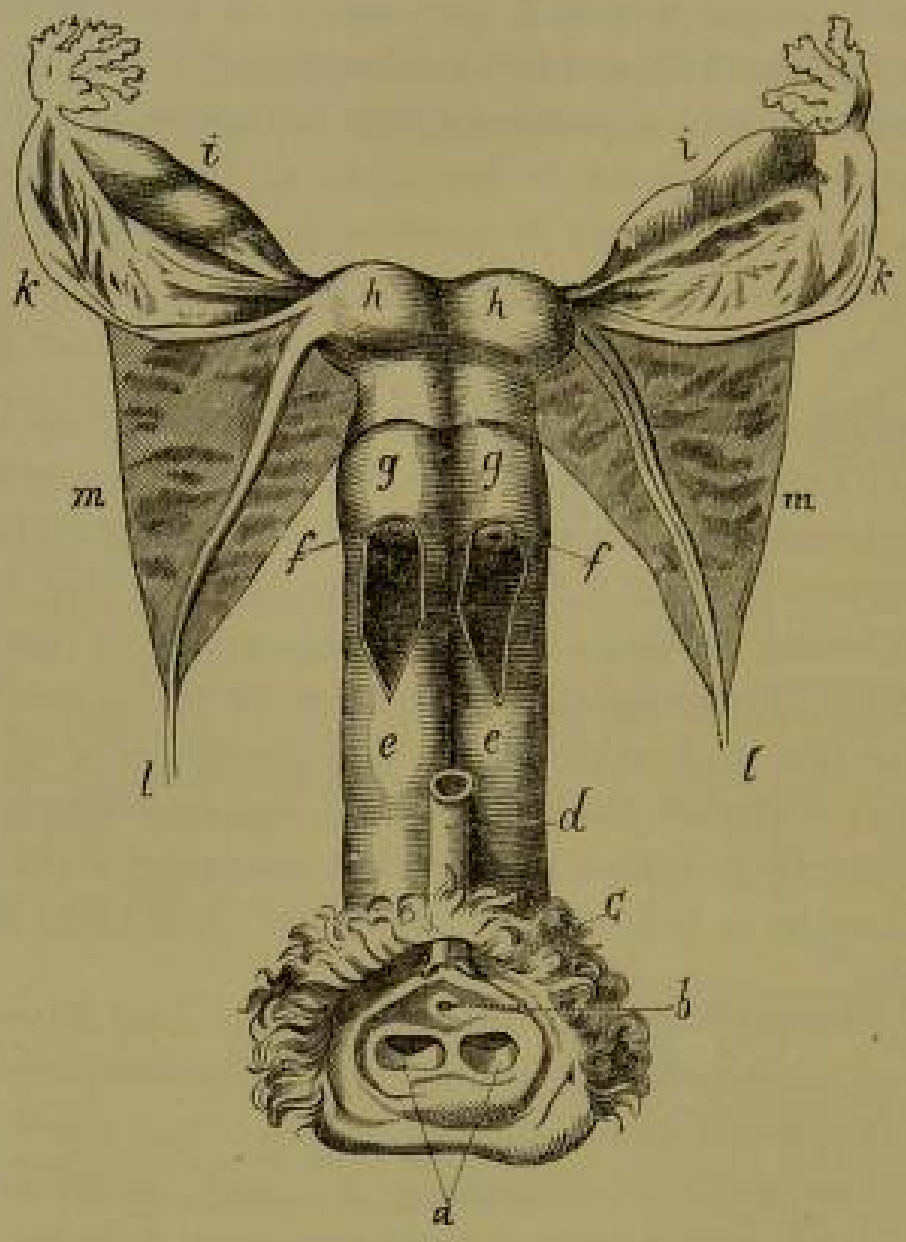


Fig. 3

Utérus et vagin double d'une fille de 19 ans (Eisenmann).

a, double orifice vaginal; b, méat uréthral; c, clitoris; d, urèthre; e, e, les deux vagins; f, f, orifices utérins; g, g, cols des deux utérus; l, l, ovaires; k, k, oviductes; l, l, ligaments ronds; m, m, ligaments larges (Courty).

Les mythes nombreux de divinités hermaphrodites imaginés par l'esprit imagé des anciens, étaient donc une remarquable aberration de l'esprit. Ce n'est pas sans raison que les Grecs représentaient la tête de Minerve unie à celle de Mercure; qu'ils représentaient leur Aphrodite avec des organes mâles et

Dans le cas observé par Debout il existait un clitoris en forme de verge de 6 cent., des grandes lèvres et dans la gauche un ovaire sorti par l'anneau inguinal et faisant l'effet

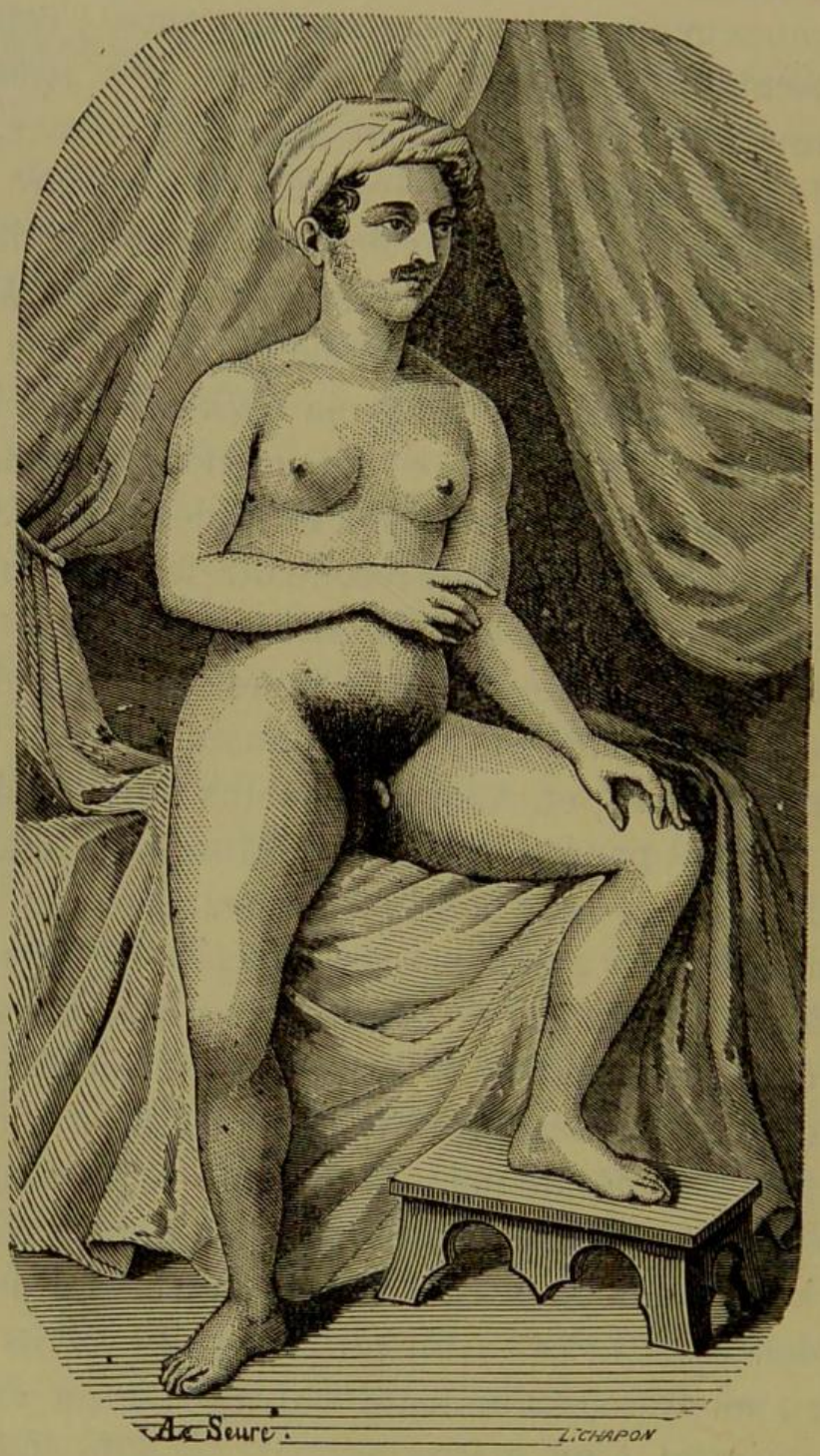


Fig. 4

Marie-Madeleine Lefort à l'âge de 16 ans.

d'un testicule, la grande lèvre paraissant elle-même l'une des moitié d'un scrotum bifide.

Le vagin était remplacé par un long et étroit canal. — Les menstrues existaient.

Deux figures *(fig, 8 et 10)* empruntées à Woods permettront au lecteur de se rendre compte de l'aspect que les organes génitaux externes peuvent avoir dans le pseudo-hermaphrodisme.

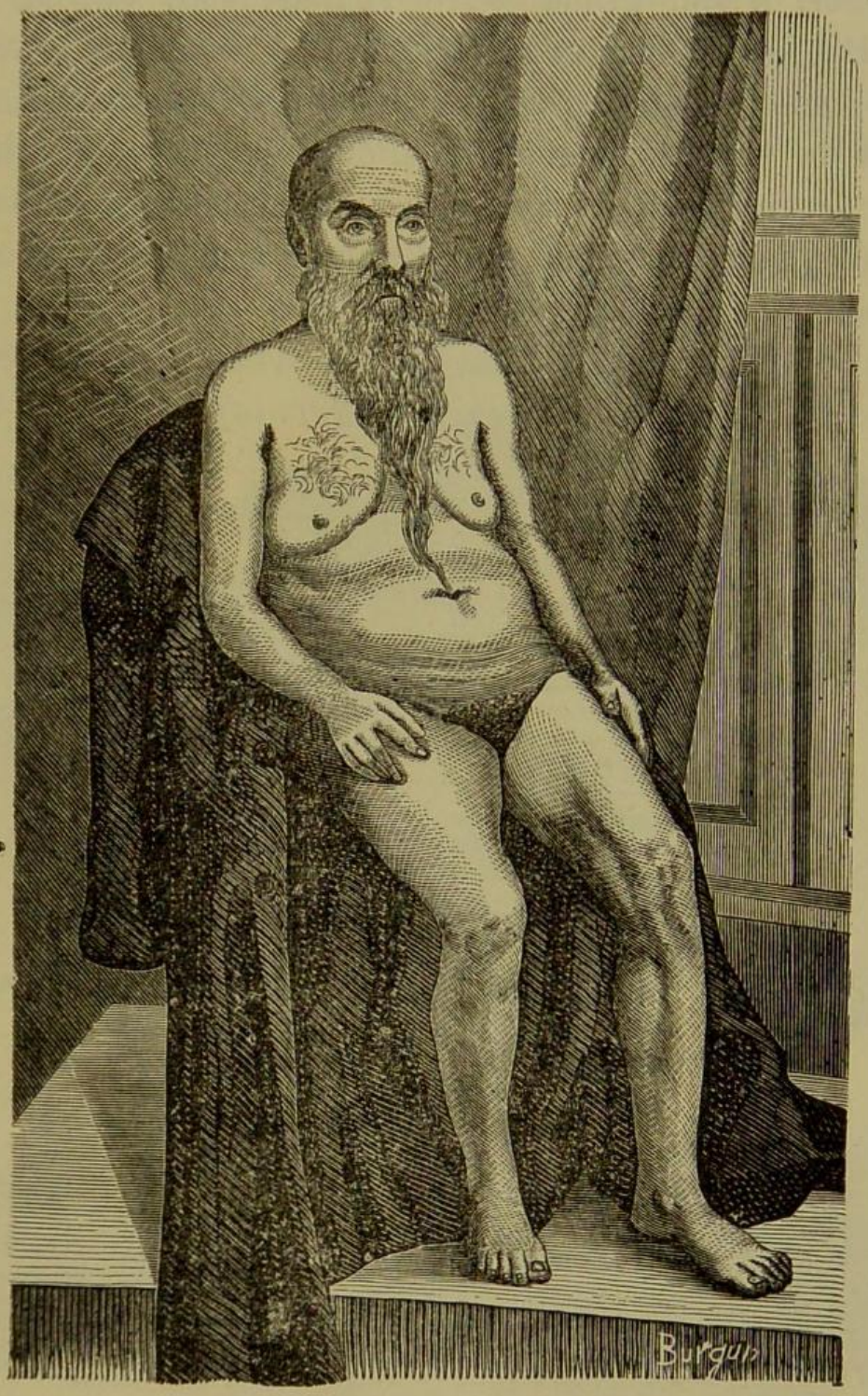


Fig. 5

Marie-Madeleine Lefort à l'âge de 65 ans.

C'est également à la catégorie des *femmes-hommes* qu'il faut rapporter l'histoire que raconte Realdo Colomb, de Cré-

mone, en son livre XV de son Anatomie : « Il y avoit une Ethiopienne ou Moresque, dit-il, laquelle ne pouvait agir ny patir commodément, car l'un et l'autre sexe luy estoit venu imparfaict, à son grand regret et détriment. Car la verge n'excédoit la grandeur et la grosseur du petit doigt, l'ovale du sein de pudicité estoit si estroite, qu'à peine pouvait admettre le bout du petit doigt aussi. Elle désiroit que je lui coupasse ladicte verge, mais je n'osay, craignant d'être blasmé et réprimé de justice, d'autant que j'estimais que ladicte abcission ne se pouvoit faire sans péril de sa vie. »

A cette variété appartient le curieux cas suivant rapporté par Jacques Duval en son *Traité des Hermaphrodits* (p. 331) :

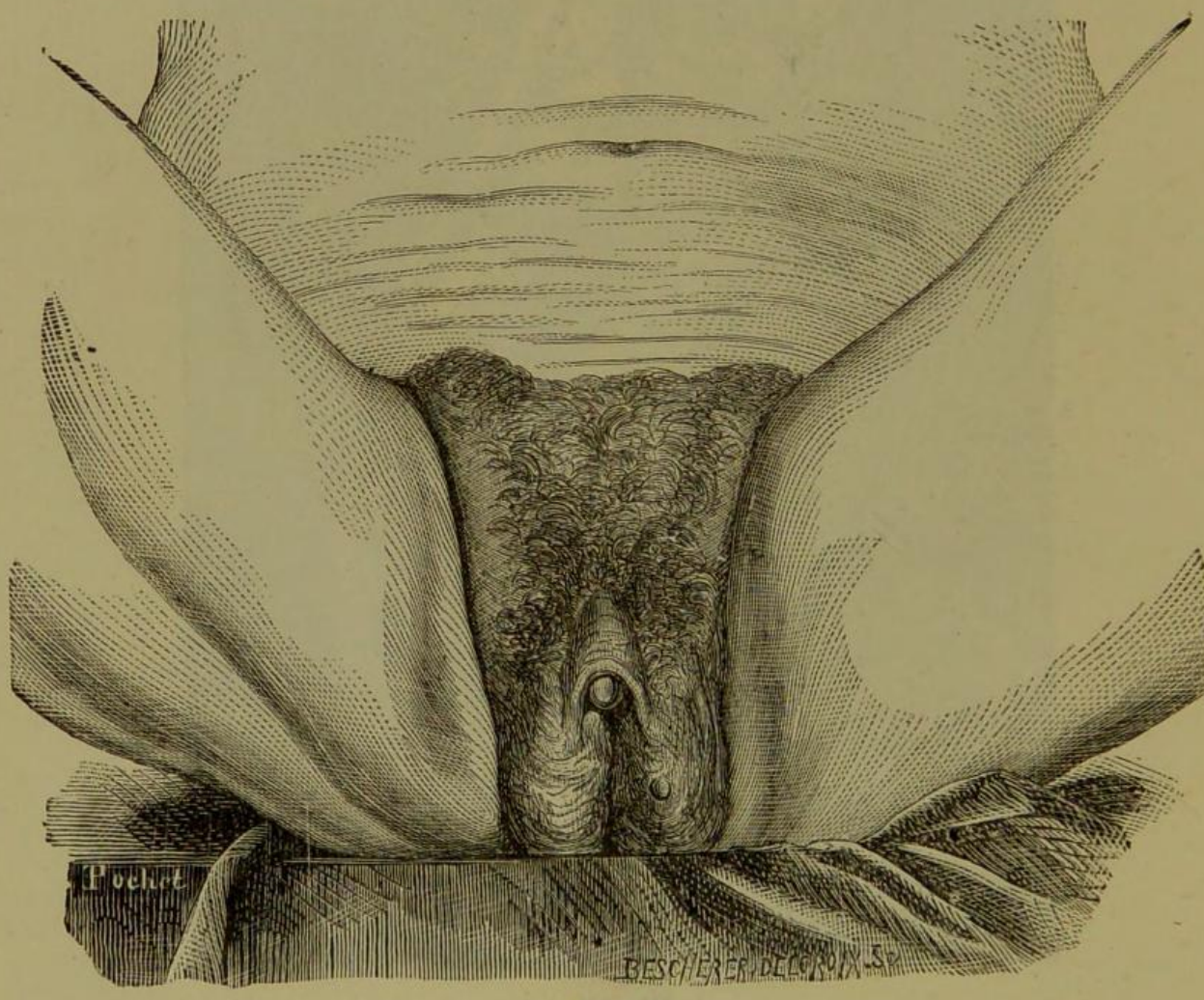


Fig. 6

Marie-Madeleine Lefort. — Aspect extérieur des organes génitaux.

« Durant le temps que j'estois au pays d'Anjou, dit-il, il y a quarante-cinq ans, un gentilhomme et sa femme plaidoient devant l'Official dudit lieu, tendant à fin le demandeur, que le

mariage qu'il avait contracté avec sa femme fust solust et déclaré nul, et qu'il lui fust permis de se remarier. La cause du divorce prétendu était que cette demoiselle avait un membre viril, long de deux travers de doigt, en la partie supérieure de l'ovale mulièbre, lieu auquel devoit estre le clitoris, qui se dressait alors que son mari vouloit avoir sa compagnie, et le blessoit, de sorte qu'il n'avoit encores eu décente habitation et copulation avec elle.

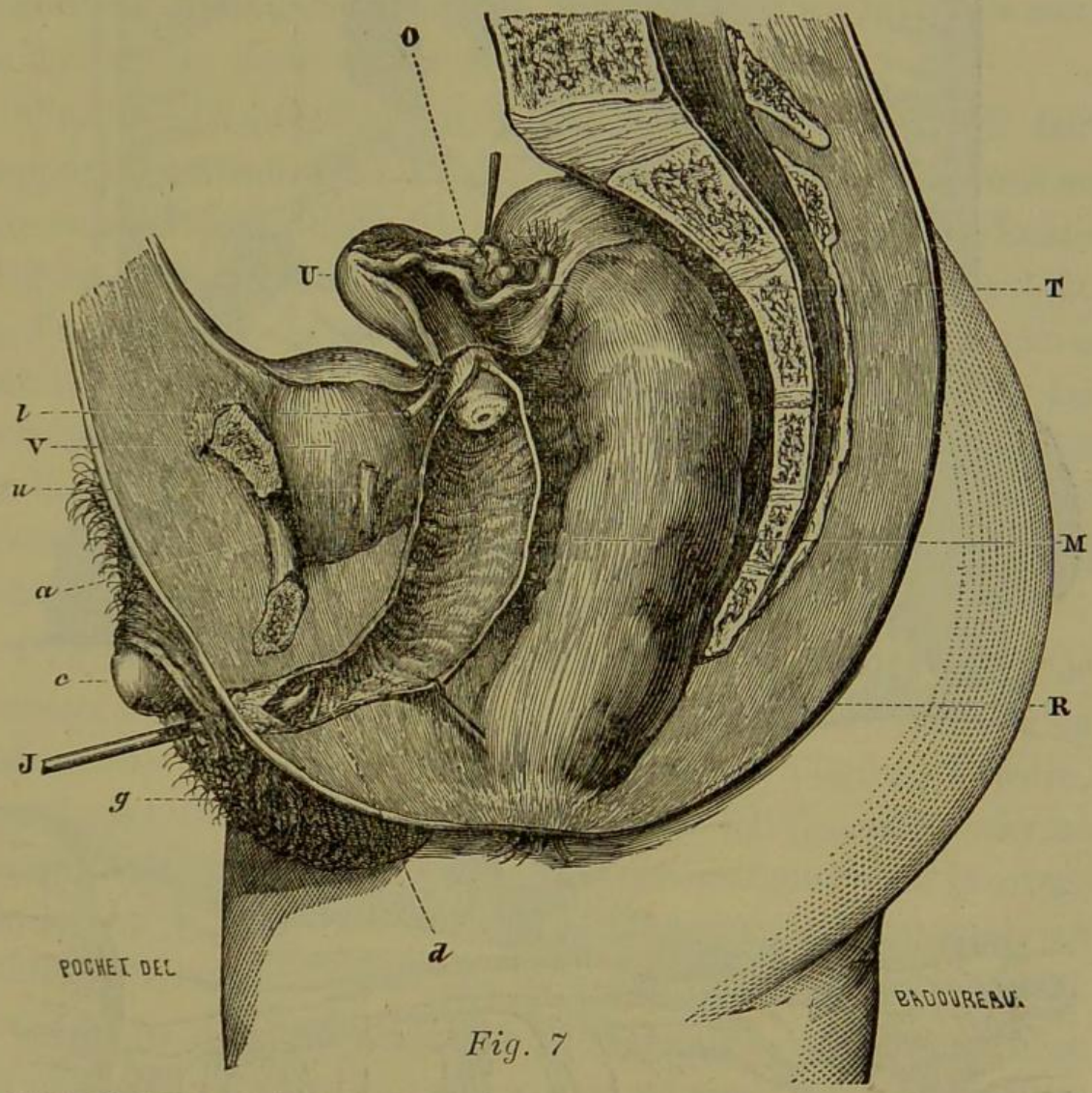


Fig. 7

Marie-Madeleine Lefort. — Coupe du bassin montrant les organes génitaux.

J, sonde passant par l'ouverture principale au-dessous du clitoris, sorte de cloaque ou canal commun aux produits d'excrétion de la vessie (urine) et de l'utérus (sang menstruel) ; M, vagin ; O, ovaires ; T, trompe ; U, utérus ; l, ligament rond ; V, vessie ; u, uretère ; d, orifice de l'urèthre ; R, rectum ; g, grandes lèvres.

« La visitation faite, le fait cognu véritable et ouy l'offre jugé pertinent du mari : c'est que si elle vouloit permettre qu'on luy coupast ladicte partie superflue et inutile en une

femme, il accorderait que le mariage perséverast, comme il avoit été célébré ; et le refus de ladicte demoiselle, qui accor-

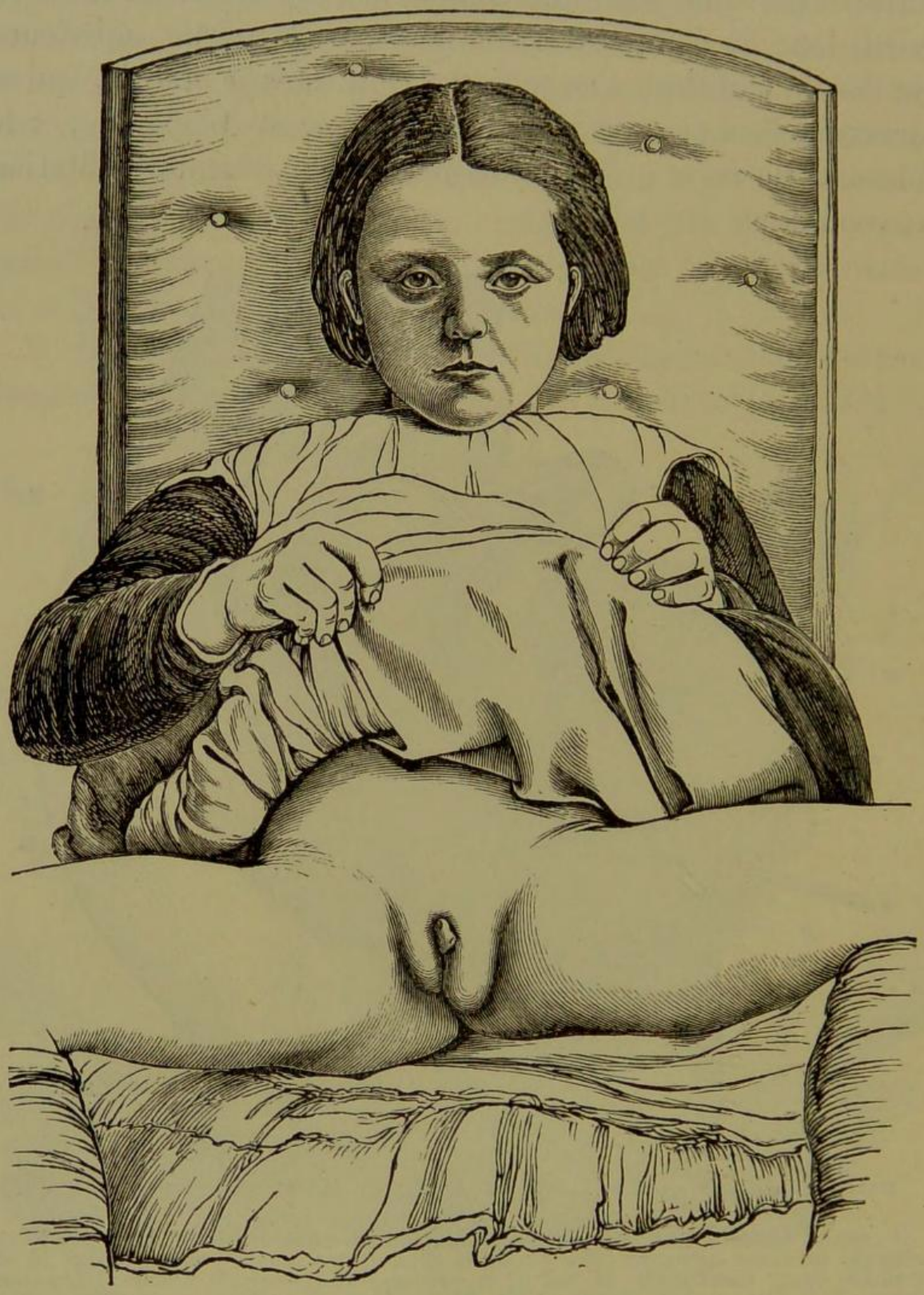


Fig. 8

Pseudo-hermaphrodite âgé de 13 ans considéré comme de sexe féminin (S. Woods).

doit plustot la solution du mariage, que de permettre l'amputation de cette partie, qu'elle vouloit réserver, ainsi que

B) *Hermaphrodites apparents de sexe masculin.*

Les pseudo-hermaphrodites masculins sont de véritables hypospades, dont l'anomalie va depuis l'existence d'une vulve, jusqu'à la fente uréthrale, ne formant plus qu'une petite ouverture au périnée. C'est dans ce cas, alors que la dépression est assez accentuée pour simuler une vulve, qu'on a vu l'approche de l'homme sur ces hommes réputés femmes, donner lieu à un véritable vagin artificiel terminé en cul-de-sac et pouvant atteindre 6 à 8 centimètres de longueur. (*Voyez fig. 9.* Verge d'un hypospade du premier degré).

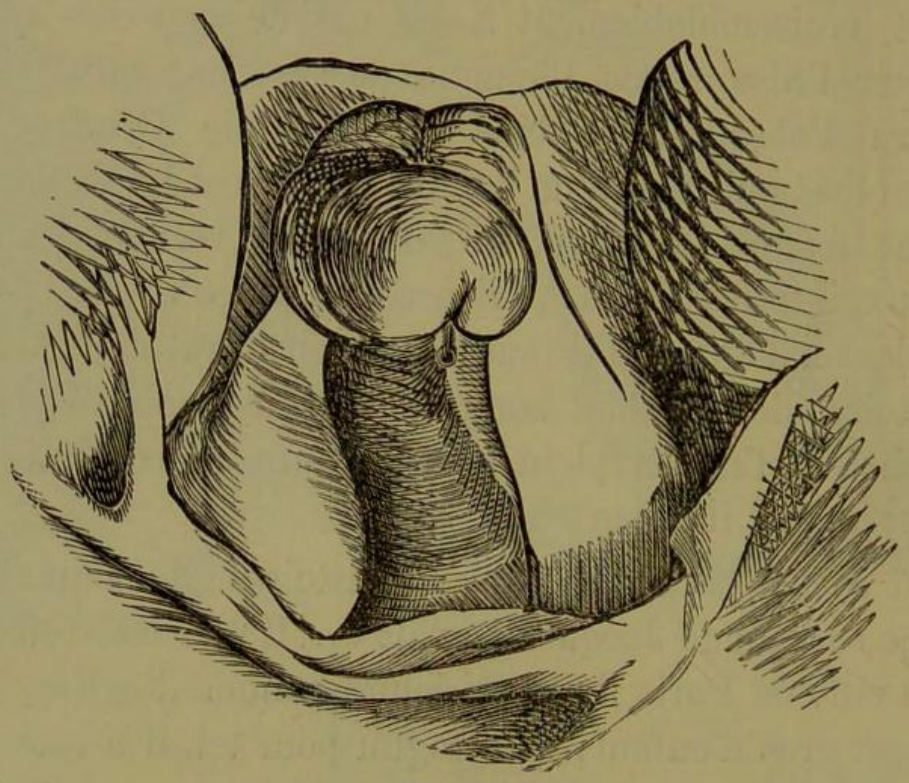


Fig. 9
Verge d'hypospade.

Dans ces conditions, il y a généralement cryptorchidie. — Les testicules sont restés dans l'abdomen et c'est surtout la descente brusque de l'un de ces organes qui trahit un beau jour le véritable sexe du prétendu hermaphrodite. Il n'y a personne qui n'ait entendu parler de filles devenues subitement garçons au moment où elles franchissaient un fossé ou faisaient un effort violent. Témoins, le jeune garçon jusque-là considéré comme femme dont l'anecdote est racontée par Ambroise Paré ;

le cas de Marie Goulich, rapporté par Landouzy (de Reims) et

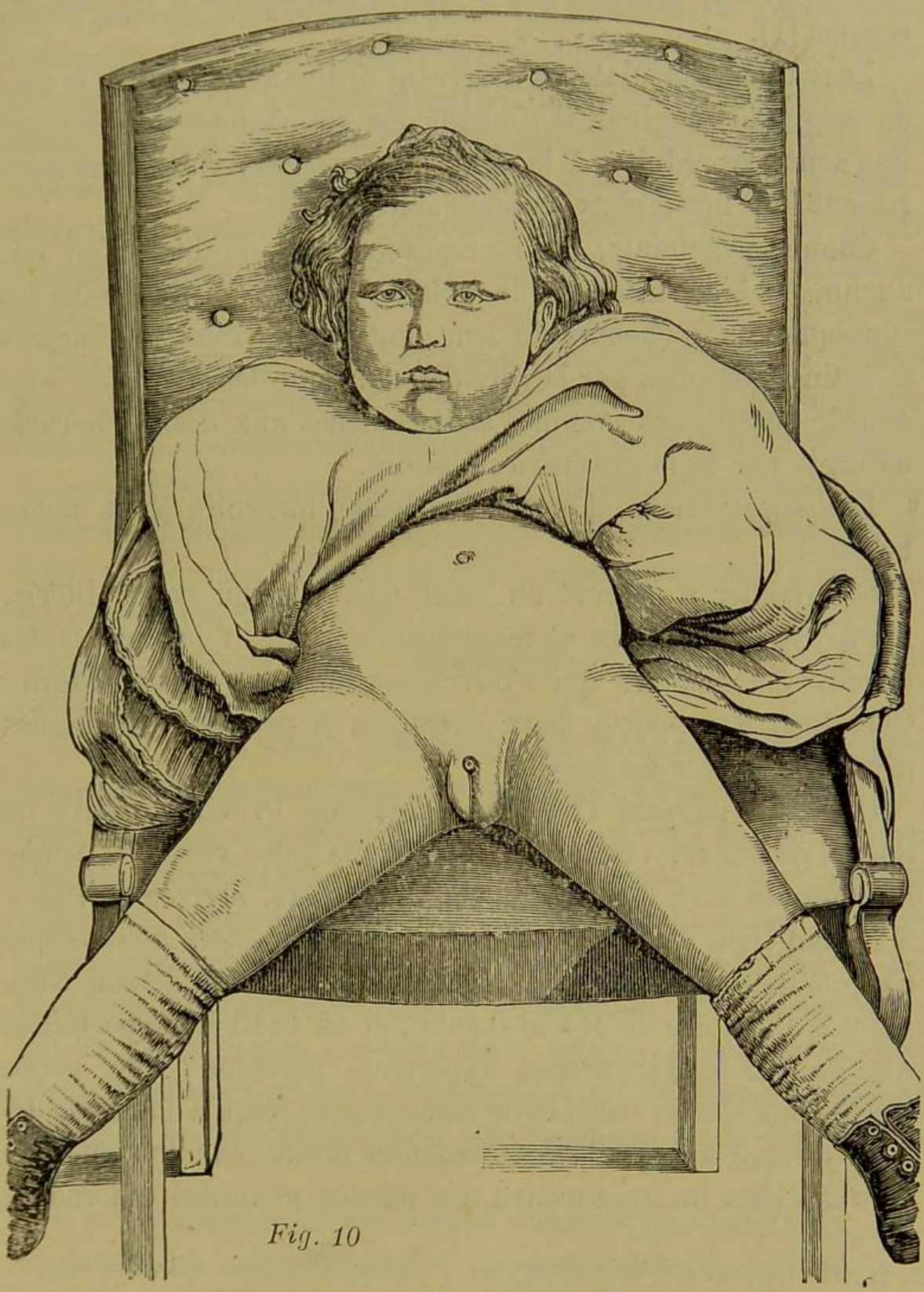


Fig. 10

Pseudo-hermaphrodite âgé de 4 ans et considéré comme de sexe masculin (S. Woods)

considérée comme fille jusqu'à l'âge de 33 ans, époque à laquelle se fit la descente des testicules ; l'histoire d'Alexina B... dont la descente testiculaire s'accompagna de phénomènes d'é-

petites lèvres s'unissent également pour former l'urèthre. C'est en effet ce qui a lieu vers la 15e semaine de la vie intra-utérine. En résumé, dans le sexe féminin, le sillon génital ne se ferme pas. Il représente le vestibule du vagin (vulve). Les bords de la gouttière se prolongent et donnent naissance aux nymphes, les replis génitaux deviennent les grandes lèvres, le tubercule génital, le clitoris.

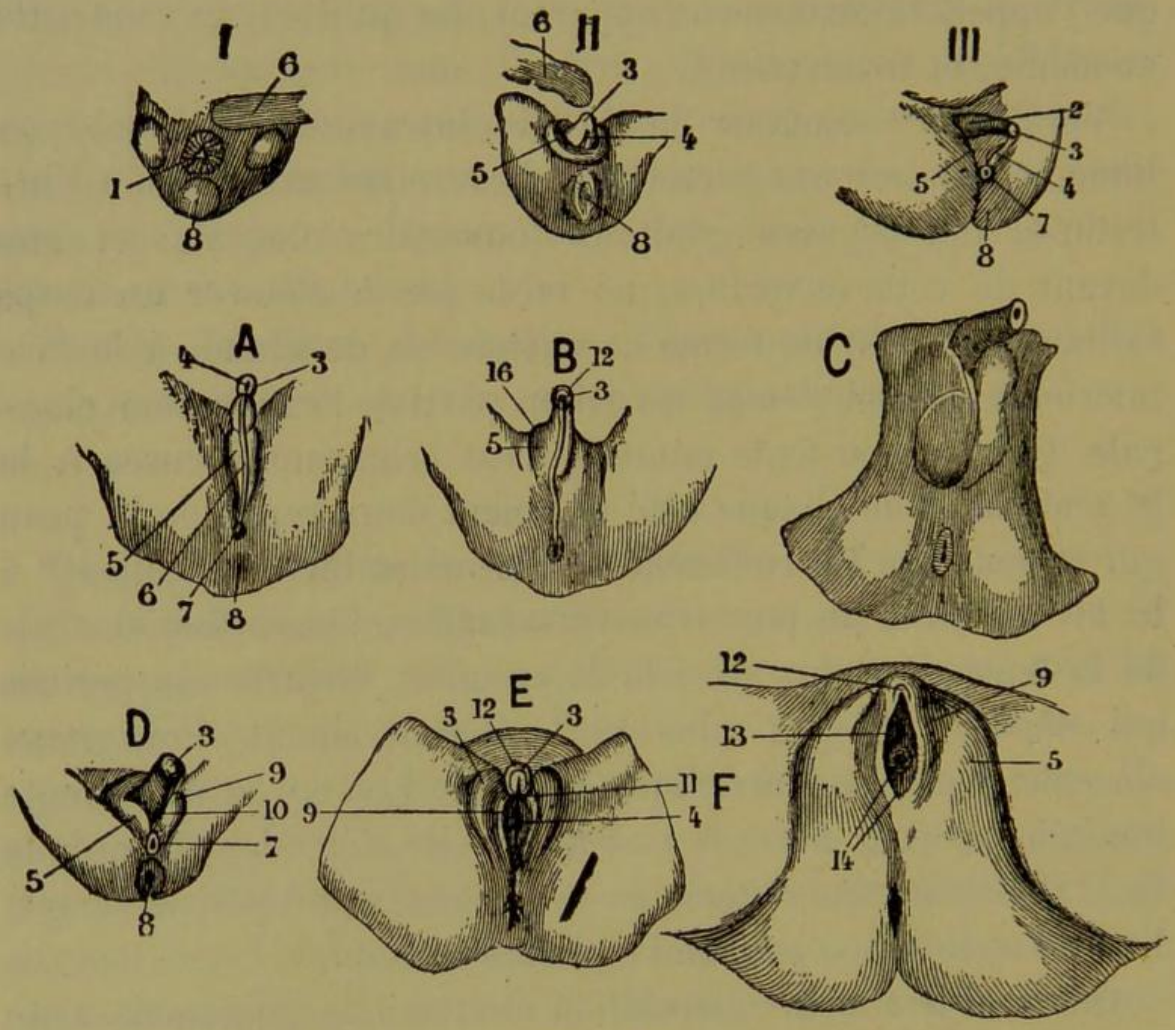


Fig. 11

Développement des organes génitaux externes (ECKER).

1, cloaque ; 2, tubercule génital ; 3, gland ; 4, sillon génital ; 5, plis génitaux ; 6, cordon ombilical ; 7. anus ; 8, queue ; 9, petites lèvres ; 10, sinus uro-génital ; 11, frein du clitoris ; 12, prépuce du gland ou du clitoris ; 13, ouverture de l'urèthre ; 14, ouverture du vagin ; 15, hymen ; 16, raphé scrotal.

Etat indifférent : I, Embryon de 16 mill. ; II, Embryon de 20 mill. ; III, Embryon de 26 millimètres.

Type masculin : A, Embryon de la fin du 3e mois ; B, Embryon du milieu du 4e ; C, Embryon de la fin du 4e mois.

Type féminin : D, Embryon de 7 semaines ; E, du milieu du 5e mois ; F, du commencement du 6e mois.

Dans le sexe masculin, le tubercule génital grandit et s'allonge pour former le pénis.

Debierre, C. (1886). *L'hermaphrodite devant le code civil : l'hermaphrodisme, sa nature, son origine, ses conséquences sociales : avec 11 figures intercalées dans le texte*. J. B. Baillière et fils libraires-éditeurs.

2._ Gallery of AI-assisted projects. I

“The girl of milk”. Supra-Gender, ———series for this issue.
Photo by: Rodrigo Granda (artificial intelligence generated image)

“Apparition of the dead, Vivienne Wimmler in my dreams”. Supra-Gender, ——series for this issue.
Photo by: Rodrigo Granda (artificial intelligence generated image)

“Appearance of dead Trans and Cis Women in my dreams”. Supra-Gender, ——series for this issue.
Photo by: Rodrigo Granda (artificial intelligence generated image)

“Appearance of the libido in my dreams”. Supra-Gender, ——series for this issue.
Photo by: Rodrigo Granda (artificial intelligence generated image)

“sodomising the ruler who appears in my dreams”. Supra-Gender, ——series for this issue.
Photo by: Rodrigo Granda (artificial intelligence generated image)

rodrigogranda333

rodrigogranda333

“The LAM’S; Aleister Crowley made contact with an entity known as LAM, now manifesting in my room”. Supra-Gender, ———series for this issue.
Photo by: Rodrigo Granda (artificial intelligence generated image)

Aleister Crowley, a prominent figure in 20th-century occultism, is known for his extensive explorations into mystical and magical realms. One of the more intriguing aspects of his work involves his contact with an entity named LAM during the "magical workings of Alamantrah." Here's a closer look at this enigmatic aspect of Crowley's legacy:

The Magical Workings of Alamantrah

Between 1917 and 1918, Crowley engaged in a series of magical rituals known as the "Alamantrah Workings." These rituals were part of his broader practice of Thelema, a spiritual philosophy and religion he founded. The purpose of these workings was to explore higher consciousness and communicate with otherworldly entities.

The Entity LAM

- **Encounter and Communication:** During these rituals, Crowley reported making contact with an entity named LAM. He claimed that LAM provided him with spiritual and mystical insights.
- **Visual Representation:** Crowley created a drawing of LAM in 1918. The sketch portrays a being with a large, oval head, large almond-shaped eyes, and a minimalistic face – features that bear a striking resemblance to the modern depiction of "grey" aliens commonly reported in UFO sightings.

Similarities to Grey Aliens

- **Physical Resemblance:** The drawing of LAM is noted for its significant similarities to the descriptions of grey aliens, particularly the large head and eyes.
- **Cultural and Mystical Intersection:** Some researchers and enthusiasts speculate that Crowley's depiction of LAM could have influenced or anticipated the modern image of grey aliens, suggesting a possible connection between occult experiences and extraterrestrial encounters.

Interpretations and Theories

1. **Dimensional and Interdimensional Beings:** Some theories suggest that Crowley, through his magical practices, may have contacted beings from another dimension or plane of existence. This concept aligns with both mystical and some modern ufological interpretations.
2. **Psychological Archetypes:** Others propose that LAM represents an archetype from the collective unconscious, a concept explored in depth by psychologist Carl Jung. This view suggests that such beings might be symbolic representations rather than literal entities.
3. **Influence on Ufology:** There is a notion that Crowley's experiences and the drawing of LAM may have indirectly influenced the popular imagery of grey aliens in ufology through cultural osmosis and the spread of occult ideas.

Crowley's Influence

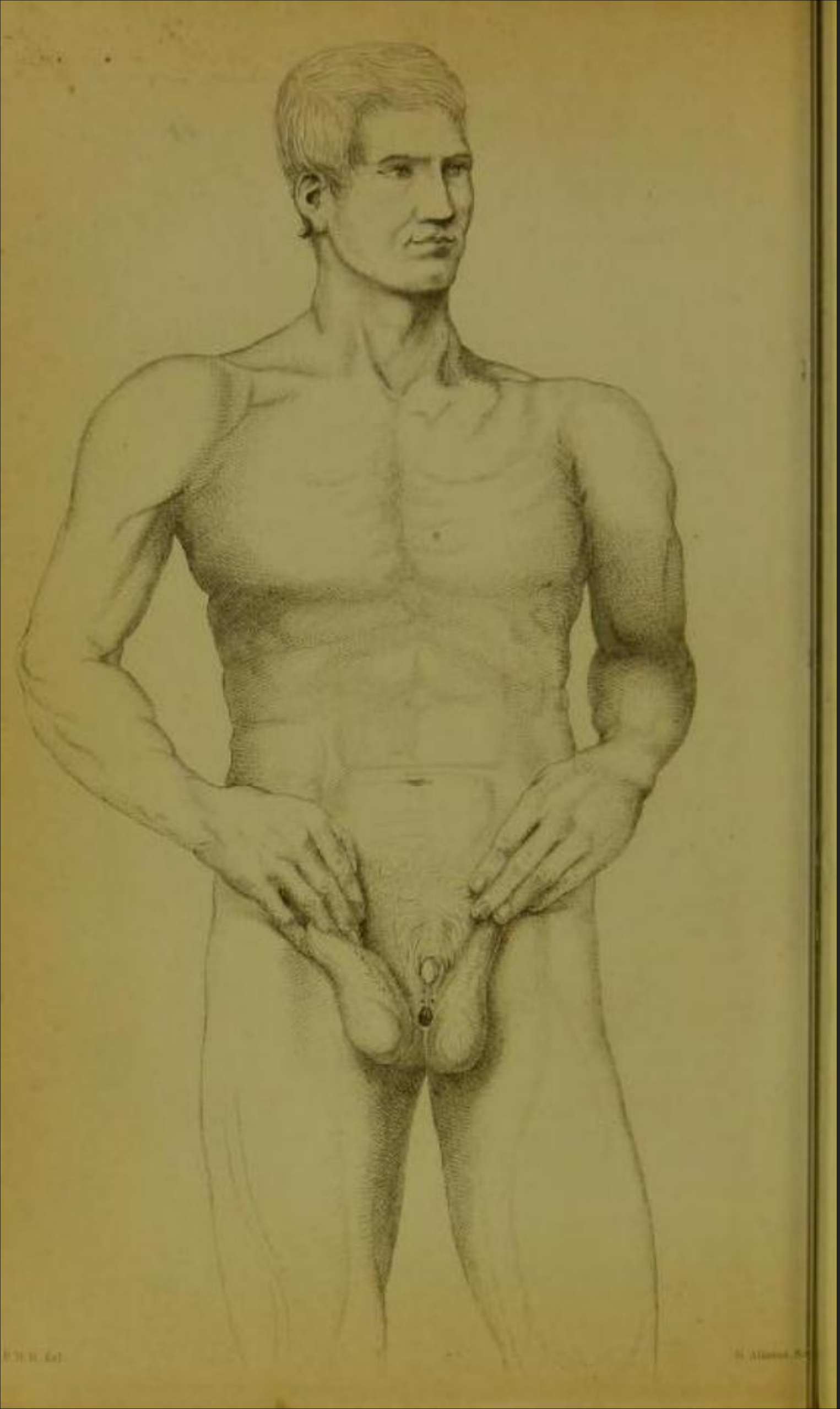
Aleister Crowley's work has had a lasting impact on both occultism and popular culture. His explorations into the mystical and the unknown continue to intrigue and inspire researchers in various fields:

- **Occult and Esoteric Studies:** Crowley's detailed documentation of his magical practices provides a rich source of study for those interested in esoteric traditions.
- **Ufology:** The resemblance between LAM and grey aliens prompts interesting questions about the connections between historical occult practices and modern extraterrestrial theories.

Conclusion

Aleister Crowley's contact with the entity LAM during the Alamantrah Workings adds a fascinating layer to his already complex legacy. The visual and thematic parallels between LAM and the iconic grey aliens serve as a curious intersection between occultism and modern UFO lore. Whether viewed as a mystical being, an archetype from the unconscious, or an interdimensional entity, LAM remains a captivating figure in the study of Crowley's magical practices and their broader cultural impact.

3._ A Hermaphrodism?



"Account of a Case of Hermaphrodism" by Peter David Handyside, published in 1835, is a significant early medical document detailing a case study of an individual with intersex traits, referred to at the time as hermaphroditism. This work was likely a pioneering contribution to the medical understanding of intersex conditions during the 19th century.

Authors and Historical Context

- **Peter David Handyside (1808-1881):** A noted physician of his time, Handyside was known for his contributions to medical literature and practice.
- **George Edward Day (1815-1872):** A former owner of the document, Day was also a significant figure in medicine, contributing to the understanding of various medical conditions.
- **Royal College of Surgeons of England:** A prominent professional body dedicated to advancing surgical knowledge and practices, providing a reputable context for the publication.

Key Aspects of the Document

1. **Case Study Details:**
   - **Subject Description:** The document likely provides a detailed physical description of the individual, noting characteristics that prompted the classification of hermaphroditism. This would include genitalia, secondary sexual characteristics, and any other relevant physical traits.
   - **Medical Examination:** An in-depth examination, including both external and internal observations, would be recorded. This might involve anatomical sketches or descriptions of the genitalia and possibly other parts of the body.
   - **Diagnosis and Classification:** The case would be categorized based on the medical understanding of the time, distinguishing between true hermaphroditism and pseudohermaphroditism, if possible.
2. **Medical Analysis:**
   - **Physiological Observations:** Insights into the physiological functioning of the individual, such as hormonal influences, reproductive capabilities, and overall health.
   - **Comparative Analysis:** The study might compare the case with other known cases of hermaphroditism to identify common features and differences, contributing to the broader understanding of the condition.
3. **Social and Psychological Considerations:**
   - **Social Implications:** Discussion on how the individual's condition affected their social interactions and societal status. This would highlight the stigma and challenges faced by intersex individuals in the 19th century.
   - **Psychological Impact:** Reflections on the psychological wellbeing of the individual, considering the societal norms and pressures of the time.
4. **Surgical and Medical Interventions:**
   - **Treatment Options:** Any surgical or medical interventions that were considered or performed on the individual, along with their outcomes and effectiveness.
   - **Ethical Considerations:** Early discussions on the ethics of treating intersex conditions, particularly in terms of consent and the individual's quality of life.

Significance of the Publication

- **Historical Medical Perspective:** Provides a snapshot of the medical understanding and approach to intersex conditions in the early 19th century, showcasing the evolution of medical knowledge.
- **Contribution to Medical Literature:** Handyside's detailed case study would have contributed to the broader medical discourse, influencing subsequent research and treatment approaches.
- **Societal Context:** Reflects the societal attitudes towards intersex individuals at the time, offering insights into the historical treatment and perception of gender diversity.

Modern Perspective

Today, the term "hermaphroditism" is considered outdated and is replaced by "intersex" to describe individuals with variations in sex characteristics. Modern medicine emphasizes the rights and dignity of intersex individuals, advocating for informed consent and avoiding unnecessary medical interventions.

Conclusion

"Account of a Case of Hermaphrodism" by Peter David Handyside is a landmark document in the historical study of intersex conditions. It provides valuable insights into early medical practices and societal attitudes, highlighting the progress made in understanding and respecting intersex individuals. This work remains an important reference for those studying the history of medicine and the evolution of gender and sexual diversity.

from the Author

4

ACCOUNT

OF A

CASE OF HERMAPHRODISM.

BY

P. D. HANDYSIDE, M. D.

FELLOW OF THE ROYAL COLLEGE OF SURGEONS, LECTURER ON ANATOMY IN EDINBURGH, &c.

(Read before the Medico-Chirurg. Society, Dec. 3, 1834.)

(From the Edinburgh Med. and Surg. Journal, No. 123.)

Gottlieb Göttlich, the son of an officer in the Saxon service, was born at the village of Nieder Leuba, near Zittau, in the kingdom of Saxony, on the 6th of March 1798.

He was considered at birth to be of the *female* sex, and was accordingly baptized by the name of *Marie Rosine Göttlich*; the initial letters of which name, with the figures 1818, are stained on his right arm. He had a brother and two sisters, who died before he was born, and of whose appearance he can give no account. He was brought up and entered into service as a female, without his true sex being ever suspected, even by himself, till the spring of 1831, when, on account of a fracture of the left *os femoris*, he was received into the hospital at Dresden.

At this period, the part which had hitherto been regarded as the left *labium externum* became distended by a small round tumour, which proved to be the left testicle, that had descended from the *abdomen*, following the course of an inguinal hernia, which had been produced by a strain at work a short time before. The intestine becoming strangulated, Professor Bach operated for its relief.

A year after this the right testicle descended after a precisely similar manner, and on this occasion Göttlich being at Göttingen, the strangulation was relieved by an operation performed by Professor Langenbeck. The cicatrices are still visible on each groin, marking the seat of these two operations.* To ob-

* I beg to refer to the annexed sketch of Göttlich, and also to a cast in the Museum of the Royal College of Surgeons of the greater part of his body, which I took the opportunity of making during his late stay in Edinburgh.

viate the inconvenience of hernias, which succeeded these operations, a double truss has since been worn.

The parts hitherto regarded as the *labia externa* were thus shown to be the lateral halves of the *scrotum* separated by a fissure on the median line.

He still continued to clothe himself in female attire, and to wear his hair turned up, till November 1832, when he visited the University of Heidelberg; and then it was that I had first the opportunity of seeing him. Professor Tiedemann, before whom he presented himself, did not hesitate to regard him at once as a *male*, but declared him to be (in the words of that distinguished anatomist) "evidently a man, with genitals of uncommon conformation. She will dress herself, therefore, in men's clothes, and adopt the name of Gottlieb." Professor Blumenbach of Gottingen, to whom this individual was presented on the 4th February 1833, confirmed the view of Professor Tiedemann.

Since that period Göttlich has been employed exhibiting himself to the members of the medical profession at the different schools in various countries in Europe. After visiting Bonn, Jena, Marburg, Mainz, Offenbach, Breslau, Bremen, and other places on the continent, he travelled by way of Hamburg and Christiania to London in April last, where he was examined by Sir A. Cooper, Mr Green, Dr Davis, and Dr Grant. He next exhibited himself at Manchester, Liverpool, Cork, Dublin, Glasgow, Aberdeen, and Montrose, and arrived at Edinburgh in November last. Since coming here, he has attracted so much of the attention of the profession, that I have been induced to believe that a short notice of the facts connected with his case might not prove unacceptable if placed upon record.

The *general appearance and conformation of body* of Gottlieb Göttlich are essentially and distinctly masculine; although when attired in female clothing he bears a remarkable similarity both in form and temperament to the robust females of the lower class in the Department of the Upper Rhine. There is, however, a perfect masculine gravity of countenance, and a complete manly self-possession in his deportment at those times when he is exhibited in a state of nudity to a number of persons. His features are rather void of expression; he is not very intelligent; in his appetites and desires he is thoroughly sensual; and his discourse and occupations (perhaps from the influence of female habits and society) are altogether womanish. This bias and turn of mind may also proceed from the constitution being so long deprived of that influence which it naturally receives from the developement which the *testes* undergo at puberty; from the long-deferred appearance of which in this individual, his system has failed to be impressed with the true characters of his sex.

The *configuration of the head* also is male, though perhaps there is (apart from a national peculiarity in the form of the skull) a greater deficiency of *cerebellum* than is usual in the male compared with the female, the posterior part of the head being very flat. His sexual desires, however, are far from being below mediocrity. The head is exceedingly prominent in front, but a remarkable and very unusual depression is observable in each temporal region.

In respect to the *surface of the body* generally, there is not that abundant deposition of fat by which muscular action is in the female so much obscured, neither is there that spare developement of the muscles themselves, nor that want of character in the bones which characterize the female, and announce the delicacy of her frame-work, by its softer and smoother contour; but in the case before us, the structure of the whole cutaneous and adipose tissues, the well-marked roughnesses along the bones affording firm attachments to the strongly developed and very powerful muscles, whose action is marked in the diversified lines along the surface of the body, impart to the figure of this individual the hard and uneven outline which so generally characterizes the male structure.

Besides the matter and form of the surface of the body, its *proportions* also partake more of the masculine character. The height of Göttlich is five feet seven inches. The shoulders are somewhat projecting. The breadth of the chest measured between the two *acromion* processes is seventeen inches; that of the *pelvis*, between the two anterior superior iliac spines eleven inches,—denoting, therefore, the comparative narrowness of the *pelvis*, and its agreement with that of the male. In this person, as may be observed of the male sex generally, the distance between the *pubes* and the *umbilicus* is shorter than between the *umbilicus* and the *scrobiculus cordis*, while the reverse is found to be the case among females; and the chest is longer in proportion to the other parts than in the female sex. The neck is short and thick; its length, from the chin to the *jugulum*, is only three inches; the length of the *sterno-mastoid* muscle only six inches, while the breadth of the neck (in accommodation with the male proportions elsewhere observed) is four and a-half inches. The *pomum Adami* is largely developed; and the voice, which before the testicles appeared was soft and quite feminine, began at that period to undergo the change of *moulting*, and it has now assumed a somewhat graver and more masculine tone.

The breasts also, which in early life were slightly elevated, have become, since the descent of the *testes*, much smaller and perfectly flat. The *perinæum* is masculine. The knees also present more of the male character, and the circumstance

that, when Göttlich stands erect, they approach more closely together than is usual in the male sex, is attributable to the mode of treatment adopted after the fracture of the *femur* already adverted to.

The next general feature in this person respects the *hair* on the surface of his body. Not only has that on the head become thicker and stronger since the testicles came down, but an appearance of hair on those parts of the body where at puberty in the male it grows has lately presented itself. A light downy beard has appeared on the chin and upper lip, and the hair in the *axillæ* and about the *pudenda* has increased materially. There is a little below the knees, but the legs, thighs, *raphé* of the *perinæum*, arms, and chest, are destitute of this covering.

Lastly, the *genito-urinary organs*, though in their external features imperfectly developed, yet present a conformation essentially masculine. The *pubes* is not prominent, and there is no developement of the *mons veneris*. The *penis* is one inch and a-half in length, but imperforate. The *glans* is distinct, and of a red colour ; it is more pointed than usual, appearing like an enlarged *clitoris*, to which it bears a more perfect resemblance from the absence of the *urethra* ; there is, however, a slight longitudinal depression where the *urethra* should have opened. The prepuce is one inch in length, loose and rugose, overhanging the *glans*, and attached to its lower surface, on each side of the depression for the *urethra*. The *crura penis* are large ; and, on an examination being made through the *rectum*, may be distinctly felt proceeding from the *tubera ischii*, and uniting together a little way in front of the arch of the *pubes*. When erected, the length of the *penis* is increased to two inches, and in thickness it resembles a common-sized forefinger.

Below the *penis*, and occupying the place of the *septum scroti*, there is a narrow elevated line or *raphé* one inch and a-half in length, commencing at the *frænum præputii*, and terminating on the upper surface of a canal of about one inch in diameter and three inches in depth, leading to the urinary bladder. The opening into the bladder is through a narrow orifice at the farther end and on the upper surface of this capacious canal, and corresponds in direction, in length, and in width to the female *urethra*.

When the walls of this canal, simulating in some respects a *vagina*, are examined by the aid of the speculum, they are seen to be lined by a membrane presenting many folds resembling the *carunculæ myrtiformes ;* and upon a more minute and extended examination of this canal with the assistance of a sound in the bladder and the finger passed up the *rectum*, it seems to have no connexion whatever with a *uterus*, a *prostate*,

or any other organ. No menstrual discharge, or any symptoms indicating the natural efforts to perform that function, have ever occurred. At the period when the *testes* descended, however, Göttlich experienced repeated attacks of *hæmoptysis*.

The urinary passage is separated from the *perinæum* by a semilunar fold of skin (resembling the *furca virginis*) which serves to direct forward the stream of urine; and its inferior border is at the distance of two inches from the *anus*, but connected to it by means of the usual cutaneous elevation,—the *raphé perinæi*.

The testicles, which are about the common size, though rather softer than natural, are, with their vessels, unequivocally present. They are pendulous in the halves of the *scrotum*, and placed at an inch distance on either side of the *raphé*, already alluded to as occupying the situation of the *septum scroti*.

From the *meatus urinarius* to the *glans penis*, the membrane on each side of the *raphé* appears in some particulars to resemble the portion of the natural *urethra* anterior to the *bulb*. It is thin and delicate, and highly vascular; and there are observable on its surface, near the *glans*, three minute *lacunæ*, probably the orifices of Cowper's glands, from which a mucous discharge is poured out; as well as two larger valvular openings (capable of admitting fine bristles to the depth of an inch,) which are the terminations of the *vasa deferentia*, and are placed immediately below the former apertures, and at the distance of about four or five lines on each side of the elevated line, which corresponds to the *raphé* and *caput gallinaginis* of the *urethra*.

The seminal fluid which, in the act of coition, or in nocturnal emissions, is discharged from the openings of the *vasa deferentia*, has been submitted to the microscope, and found to present the usual characters.

In the last place, with regard to the *sexual desires* manifested by this individual, these are moderately strong. He has had frequently connexion with the male, from the age of fifteen years to the present period, and, indeed, up to the time when the testicles descended, he felt no inclination for connexion with the female. He has, however, since that period experienced this desire, and gratified it while at Hamburgh two years ago. The circumstance, that he cannot perfectly perform the functions of a man, may serve to explain how he has not much passion for women, and how his amative desires are still directed towards his own sex.

In addition to the detail of facts to which in this communication I have confined myself, I would observe, that the pe-

culiarities of developement now described appear to me to consist almost entirely of *deficiencies of male organization.* Though I have, in compliance with the common language of authors, entitled the case one of Hermaphrodism, as this term has been commonly applied to instances of animals being brought forth whose organs of generation are preternaturally formed,—yet, in strict physiological propriety, this is a term which ought, I believe, to be confined to that species of malformation of the organs of generation, in which there is really a mixture of male and female parts in equal or in different degrees.

Under the impression, then, that such is the just and correct anatomico-physiological definition of an hermaphrodite, and that there is much reason to believe that no strict instance of such a condition of the generative organs,—a union of all the organs of both sexes in the same individual,—has ever occurred either in the more perfect animals, or in the human species, I would designate the foregoing case of Göttlich as one simply of *Hypospadias*, (or *urethra* forming but half a canal, and opening below the *penis*, or in the *perinæum*,) which is only the first step towards true and real hermaphrodism.

But a feature in which I believe *this* case of *hypospadias*, though in many particulars resembling others on record, to be perhaps unique, is in the manner in which the *urethra* opens on the upper surface of a wide canal; therein appearing to be strictly analogous to the mode of entrance of the membranous portion of the *urethra* into the *bulb*.

In conclusion, though such malformations of the parts of generation in the male, which have been mistaken for a mixture of those of both sexes, are in a great number of cases beyond the reach of surgical art, it is otherwise in the present instance, where there exists a very minor degree of imperfection in the impregnating organs; it being ascribable only to a deficiency in the *urethra*, and apparently to no other cause that Göttlich has proved himself to be incompetent to discharge the functions of his sex. Accordingly, the imperfection in the *urethra* might be materially diminished, if not altogether removed, by contracting the orifice of the wide canal in the *perinæum*, and by uniting the edges of the divided *scrotum;* thus continuing upwards the canal of the *urethra* to the *glans penis* itself. The present case is one in which we might fairly anticipate success from such an operation. When it was formerly proposed, however, by Professor Langenbeck, Göttlich declined all surgical aid, and he is now still more averse to a proposal of this kind, since it would at once deprive him of his present easy and profitable mode of subsistence.

March 1835.

PRINTED BY JOHN STARK, OLD ASSEMBLY CLOSE.

Account of a case of hermaphrodism / by P.D. Handyside.
Handyside, P. D. (Peter David), 1808-1881.
Date: [1835]

4._ cabinet of the hermaphrodite: the bisexual figure

Group of Pan and Daphnis

Roman art

Characteristics ↓ **Description** ↓

Date	High imperial age (1st-2nd century A.D.)
Museum	The Uffizi
Collection	Sculpture
Location	Third Corridor (A24)
Technique	Greek marble
Size	140 cm (height)
Inventory	1914 n. 92

The history of this sculpture is rather obscure: it is not known where it was found, having been in the Villa Medici in Rome since 1722 and moved to Florence in 1787. The pair of figures represents the god Pan, with goat-like features, seated beside the shepherd Daphnis, intent on playing the pan flute. Daphnis, son of Hermes and the nymph Daphne, embodies, in Greek myth, the ideal of the eromenos, the child of unparalleled beauty capable of fascinating every man or divinity. In addition to Apollo, Daphnis was also Pan's lover who, in this group, encircles the young man with his left arm, while with his right arm he seems to guide him in the use of the instrument. In the figure of Pan the left paw, the horns and both arms are integrated, while in Daphnis the left arm with the pan flute, the right hand and some parts of the head are noteworthy. Several replicas of this group are known from literary sources and archaeological finds, the original of which was perhaps attributable to late Hellenism. The erotic character, however, gives way here to a more complex series of references, including the themes of nature, bucolic poetry and tragic death.

Bibliography

A. Romualdi (a cura di), Studi e restauri. *I marmi antichi della Galleria degli Uffizi*, II, Firenze, Polistampa, 2007 (con contributi di B. Arbeid, Gruppo di Pan e Dafni, pp. 154-161; M. Ricci, Il restauro, pp. 162-165) e bibliografia precedente.

Text by

Fabrizio Paolucci

Tags

Sculpture roman art

LE GALLERIE DEGLI UFFIZI

Statue of Hermaphroditus from Pergamon

Hermaphroditus (or Hermaphroditos) was a child of **Hermes** and **Aphrodite**. The sex of Hermaphroditus is rendered very discreetly. The lower part of the body (including the hips and external genitals) is of a young man, while the upper part of the body (navel, breasts, prominent nipples, and the shape of the head and the hairstyle) is feminine. The idea of melancholy (common to all depictions of Hermaphroditus) is highlighted by the shape and drawing of the mouth. Marble. **Hellenistic**, 3rd century BCE. From **Pergamon**, Bergama, in modern-day **Turkey**. (Museum of **Archaeology**, Istanbul, Turkey).

WORLD HISTORY ENCYCLOPEDIA®

About the Author

Osama Shukir Muhammed Amin

Associate Professor of Neurology and lover of the Cradle of Civilization, Mesopotamia. I'm very interested in Mesopotamian history and always try to take photos of archaeological sites and artifacts in museums, both in Iraq and around the world.

COLLECTIONS

Louvre

Inventory number	**Entry number:** MNC 1335 **Catalog number:** Br 788
Collection	Department of Greek, Etruscan and Roman Antiquities

DESCRIPTION

Name / Title	Name: group of statuettes; furniture item (?)
Description / Decor	Hermaphrodite (half-draped, standing, on, base, round, posing, arms, on); satyr (playing, syrinx); Hermaic pillar Condition of the work: complete.

HARDWARE FEATURES

Dimensions	Height: 12.8 cm; Width: 6.7cm; Depth: 5.2cm; Height: 16.5 cm (with base); Depth: 6 cm (with base)
Material and technique	Material: bronze Technique: solid cast iron (cast = melted = cast iron) Technical precision: base formed by a flat base placed on a socket

Roman Hermaphrodite Fresco

Fresco fragment depicting a hermaphrodite displaying both male and female anatomy, 2nd half of 3rd century CE, from Capua. (Museo Barracco, **Rome**)

Carole Raddato

Carole maintains the popular ancient history photo-blog Following Hadrian, where she travels the world in the footsteps of emperor Hadrian.

WORLD HISTORY ENCYCLOPEDIA®

UNIVERSITY OF ILLINOIS-URBANA
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A Private Anthropological Cabinet of the Hermaphrodite: The Bisexual Figure in Photographs and Illustrations After the Originals from Scientific Explorations, Field Studies and Museum Archives
Erotica Biblion Society, 1903

Hermaphrodite-like creature, popular in the art of the 19th Century.

(Private Collection,Rome)

"Garçon et fille hermaphrodites vus et dessinés d'après nature par un des plus célèbres artistes et gravés avec tout le soin possible pour l'utilité des studieux" is a historical work from 1773 that offers detailed observations and illustrations of hermaphroditic (now referred to as intersex) individuals. This publication reflects the 18th-century medical and artistic interest in documenting human anomalies.

Context and Significance

- **Historical Documentation:** During the 18th century, scientific and medical communities were deeply interested in cataloging and understanding human differences, including those in sexual development.
- **Educational Purpose:** The detailed engravings and descriptions aimed to educate and provide detailed anatomical knowledge for students and scholars of the time.

Content Overview

1. **Detailed Illustrations:**
    - **Accurate Depictions:** The work features precise illustrations created by a renowned artist of the era. These drawings would have been made based on direct observations of the individuals, aiming to capture their physical characteristics as accurately as possible.
    - **Anatomical Focus:** The illustrations likely emphasize the anatomical details of the intersex individuals, showcasing both external and possibly internal reproductive structures.
2. **Medical Observations:**
    - **Descriptive Accounts:** Alongside the illustrations, there would be detailed written descriptions of the individuals' physical traits. This would include notes on the appearance of genitalia, secondary sexual characteristics, and any other relevant anatomical features.
    - **Comparative Analysis:** The text might compare these observations with typical male and female anatomy to highlight the variations seen in intersex individuals.
3. **Case Studies:**
    - **Individual Profiles:** Each illustrated subject, referred to as "garçon" (boy) and "fille" (girl), would have their own case study, providing insights into their personal and medical history as known at the time.
    - **Social Context:** These case studies might also touch upon the social implications for these individuals, including how their conditions affected their lives and social standing.
4. **Artistic and Scientific Collaboration:**
    - **Artistic Excellence:** The collaboration with a skilled artist ensures that the illustrations are not only scientifically valuable but also of high artistic quality.
    - **Scientific Rigor:** The engravings were made with great care to serve as reliable educational tools, indicating a high level of scientific rigor in their creation.

Importance in Medical and Social History

- **Advancement of Medical Knowledge:** This work contributed to the broader understanding of human anatomy and intersex conditions, providing a foundation for future medical studies.
- **Cultural and Societal Insights:** The document offers a glimpse into the cultural and societal attitudes toward intersex individuals in the 18th century, reflecting both the curiosity and the stigmatization they faced.
- **Historical Record:** It serves as an important historical record of how intersex bodies were viewed, studied, and represented in art and medicine during this period.

Modern Perspective

Today, the study of intersex conditions is guided by a respect for human rights and bodily autonomy. Modern medicine emphasizes the importance of understanding and acceptance, avoiding unnecessary medical interventions, and supporting intersex individuals' rights to make informed decisions about their bodies.

Conclusion

"Garçon et fille hermaphrodites vus et dessinés d'après nature" is a valuable historical document that provides detailed and carefully rendered illustrations of intersex individuals from the 18th century. It reflects the intersection of art and science in the pursuit of medical knowledge and offers significant insights into the historical understanding and treatment of intersex conditions.

GARÇON ET FILLE HERMAPHRODITES

VUS ET DESSINÉS D'APRÈS NATURE

PAR UN

Des plus Célébres Artistes

ET GRAVÉS

Avec tout le soin possible pour l'utilité des Studieux

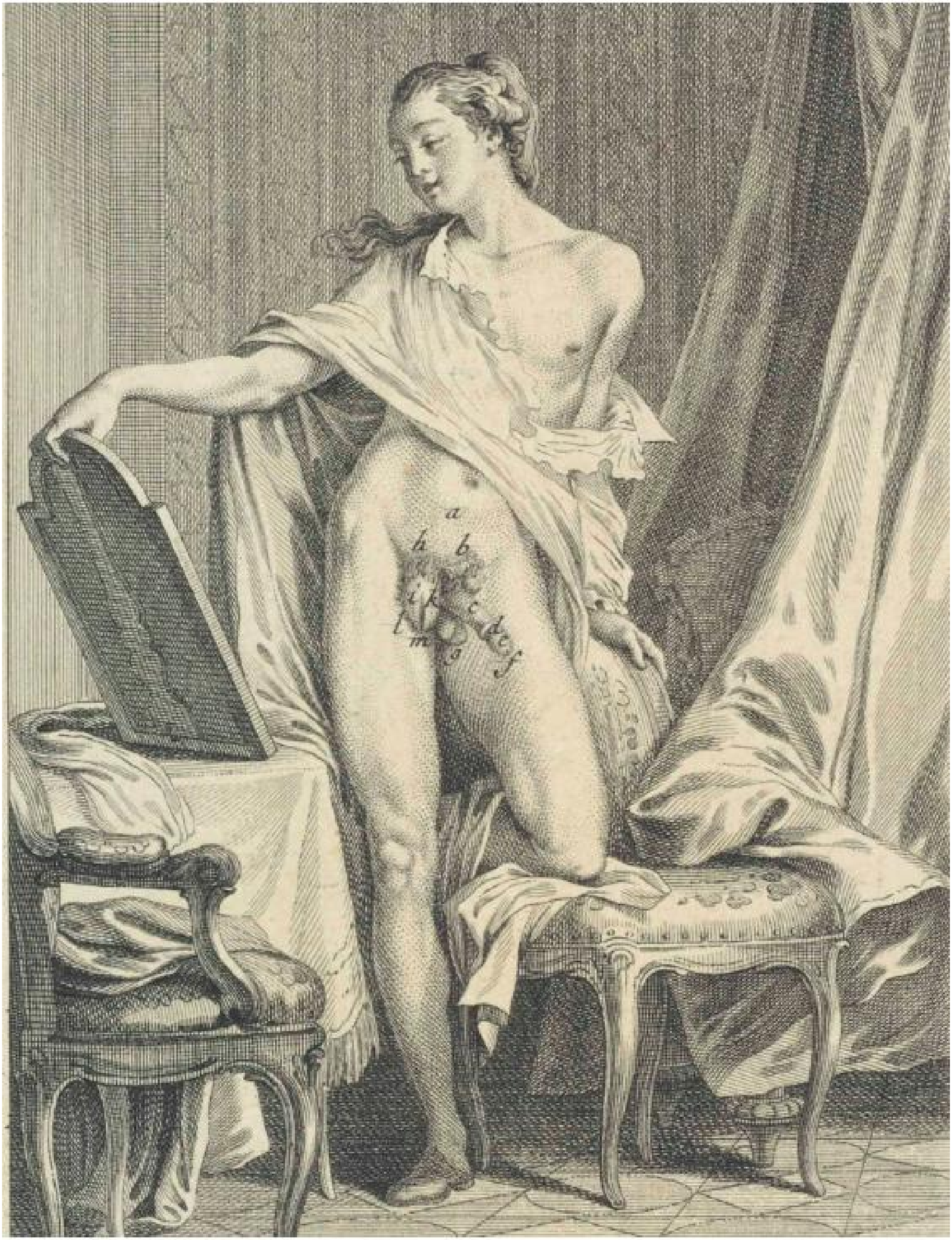
A PARIS

KONGL: CAROLINSKA INSTITUTET MEDICO CHIRURG

Beaublé Scrip

MOREAU, Jean Michel (1741-1814)

Garçon et fille hermaphrodites vus et dessinés d'après nature par un des plus célébres artistes et gravés avec tout le soin possible pour l'utilité des studieux.
Paris [1772-1773].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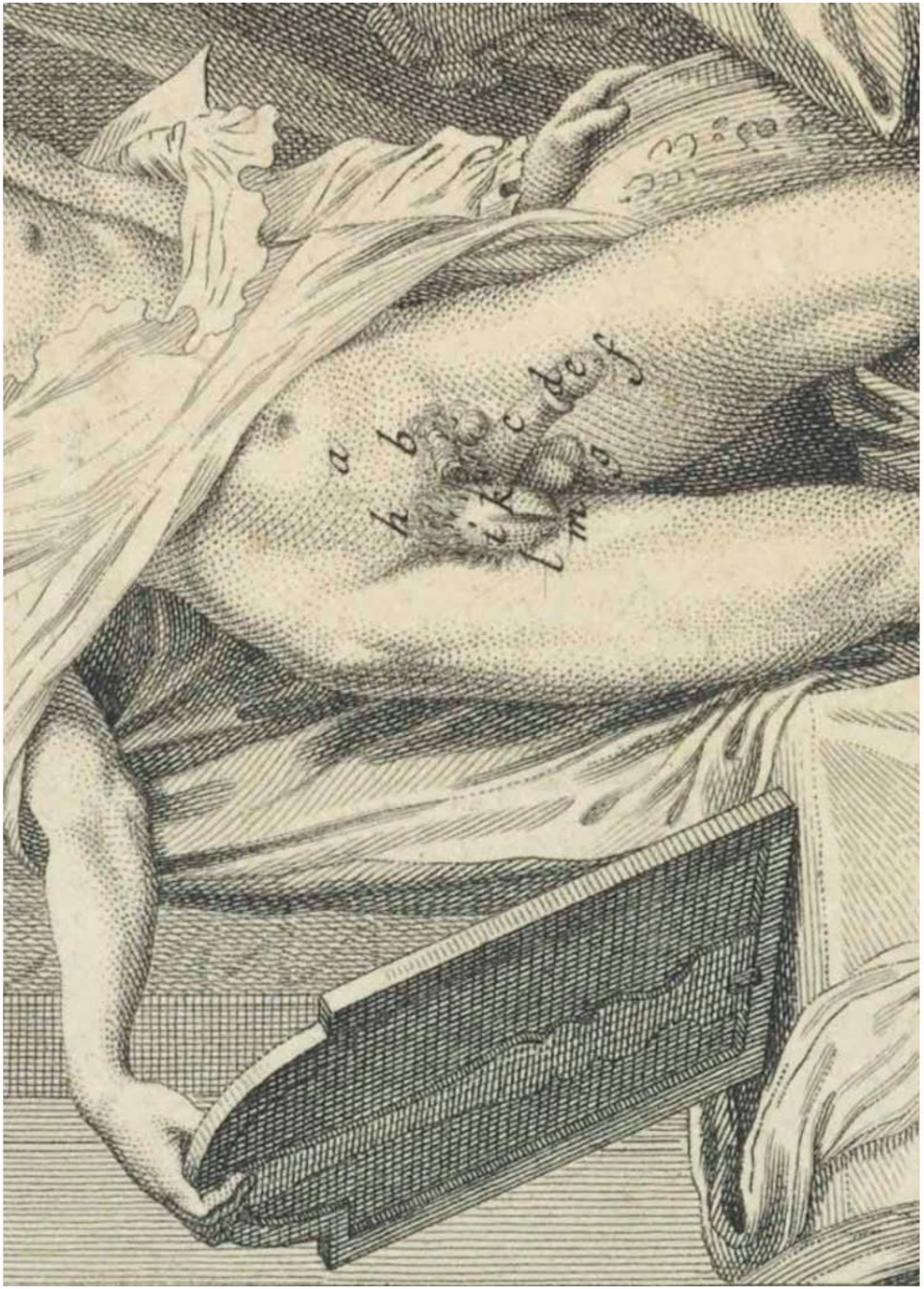
GARÇON HERMAPHRODITE.

Vu et Dessinée d'apres Nature, pour l'utilité des Studieux.



FILLE HERMAPHRODITE,

Vu & Dessinée d'après Nature, pour l'utilité des Studieux.

Tags

1700 Engraving

Publication place

Paris

Year

1772

Format

8vo – leaf: 170 x 102 mm.

A rare little book on two remarkable cases of hermaphroditism, classified as being of the fourth class, that is with fully developed both male and female sexual characteristics and genital tissues. The two plates, intended to enlighten the medical student, depict a boy and a girl posing with grace and elegant charm in their boudoirs. The boy, Louis Hainault (1752-1773), lived nearby Rouen where he served apprenticeship to a shoemaker. His malformation had been ignored by his parents and his case was unknown until a few days before his death, when he was sent to hospital and was examined by surprised physicians. The girl, Marie Auge, born in 1755, was brought up by her parents as a girl. Her rare condition had escaped recognition when her secret by accident was disclosed. It attracted a great sensation and she was put on display for a "grand nombre de curieux et de desinateurs". When the book was written she had escaped from Paris to take refuge in London. The fine plates were drawn from nature by Jean Moreau le jeune, one of the most famous book illustrators of the French Rococo and the most sought-after illustrator in Paris. He illustrated many of the classics of French literature, e.g. Molière, La Fontaine, Voltaire and Rousseau. His masterful plates often describe in greater detail than any text the manners and the material environment of the fasionable upper class in France on the eve of the French Revolution. His two plates of hermaphrodites may well have fitted to illustrate the works of that remarkable French author of extremely relaxed morals, Restif de la Bretonne, who used many of Moreau's plates to illustrate his mind-boggling multitude of books.

Collation: Garçon: title-leaf, pp 1-7 (1) blank; Fille: pp 8-13. Two engraved plates. Title and text engraved within a double border. Title-page signed "Beaublé Scrip".

Binding: Contemporary mottled calf with red edges.

References: Cohen 425; Brunet, Supplement 532; Gay, Bibliographie des ouvrages relatifs a l'amour, aux femmes, . . . , II, 390.

"Hermaphroditismus beim Menschen" by Franz Ludwig von Neugebauer, published in 1908, is a seminal work in the field of medical science focusing on intersex conditions, historically referred to as hermaphroditism. This publication reflects early 20th-century medical perspectives and advances in understanding human sexual development variations.

Author and Context

- **Franz Ludwig von Neugebauer (1856-1914):** A distinguished Polish gynecologist and medical researcher, Neugebauer made significant contributions to the study of human sexual development and anomalies.
- **Early 20th Century Medicine:** At this time, medical science was increasingly systematic and evidence-based, with advancements in anatomy, pathology, and surgical techniques enhancing the understanding of various conditions.

Key Aspects of the Publication

1. **Detailed Case Studies:**
   - **Comprehensive Descriptions:** Neugebauer's work likely includes thorough case studies detailing the physical characteristics, medical histories, and anatomical examinations of individuals with intersex traits.
   - **Clinical Observations:** Each case study would provide in-depth clinical observations, including descriptions of external and internal genitalia, secondary sexual characteristics, and any relevant physiological functions.
2. **Classification and Diagnosis:**
   - **Types of Hermaphroditism:** The text would classify different forms of hermaphroditism based on observed traits, likely distinguishing between true hermaphroditism (presence of both ovarian and testicular tissue) and pseudohermaphroditism (discrepancies between gonadal and phenotypic sex).
   - **Diagnostic Techniques:** Neugebauer might discuss the diagnostic techniques used at the time, such as physical examinations, histological analyses, and possibly early forms of radiographic imaging.
3. **Medical and Surgical Interventions:**
   - **Treatment Approaches:** The publication would explore the medical and surgical interventions available in the early 20th century for treating individuals with intersex conditions. This could include surgical corrections and hormone treatments, though the latter was in its infancy.
   - **Case Outcomes:** Detailed accounts of the outcomes of these interventions, including any complications, successes, and long-term follow-ups.
4. **Ethical and Social Considerations:**
   - **Patient Experiences:** Insights into the personal experiences and societal challenges faced by intersex individuals, including social stigma and psychological impact.
   - **Ethical Discussions:** Early discussions on the ethical implications of medical interventions, patient consent, and the right to bodily autonomy.

Significance of the Publication

- **Advancement in Medical Knowledge:** Neugebauer's work represents a significant step forward in the medical understanding of intersex conditions, contributing to the evolving field of sexology and endocrinology.
- **Historical Context:** It provides valuable insights into the medical practices and societal attitudes towards intersex individuals in the early 20th century, illustrating the progress and limitations of the period.
- **Foundation for Modern Studies:** This publication laid the groundwork for modern studies on intersex conditions, influencing future research and clinical approaches.

Modern Perspective

Today, the approach to intersex conditions emphasizes respect for individual rights and informed consent, moving away from unnecessary medical interventions. The term "hermaphroditism" is largely considered outdated and is replaced by "intersex," reflecting a more accurate and respectful understanding of these conditions.

Conclusion

"Hermaphroditismus beim Menschen" by Franz Ludwig von Neugebauer is a landmark publication in the study of intersex conditions. It offers comprehensive case studies, medical classifications, and discussions on treatment approaches that were pioneering for its time. This work remains an important historical reference, providing insights into the medical and social understanding of intersex individuals in the early 20th century and highlighting the progress made in this field over the subsequent century.

Library of
Dr. HUGO EHRENFEST.
Gen 93

Hermaphroditismus beim Menschen

Von

Franz Ludwig von Neugebauer

Vorstand der gynaekologischen Abteilung des Evangelischen Hospitals in Warschau

Leipzig 1908 □ Verlag von
Dr. Werner Klinkhardt

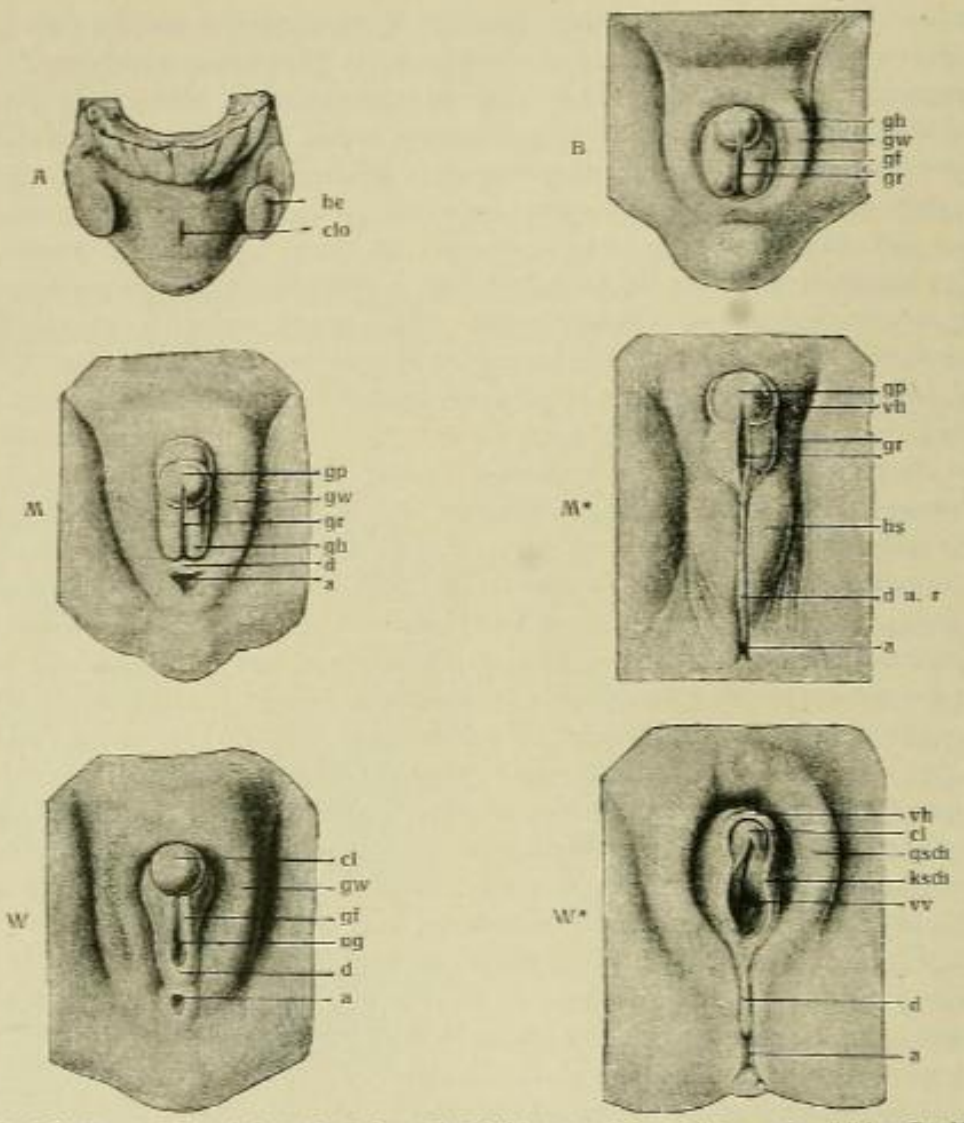


Abb. 32. 6 Stadien zur Entwickelung der äußeren Geschlechtsorgane im männlichen und weiblichen Geschlechte. (Kopiert nach Hertwig, loc. cit. p. 461, Fig. 489 u. 490.) A u. B zwei noch indifferente Stadien (in B der Embryo 8wöchentl.) M und M* Umbildung der indifferenten Anlage zu männlichen Embryonen (von 2½ u. 3 Monaten), W u. W* zum weiblichen Geschlechte (2½ und 4½ monatl. Embryonen). he = hintere Gliedmaße; clo = Kloake; gh = Geschlechtshöcker; gf = Geschlechtsfalte; gr = Geschlechtsrinne; gw = Geschlechtswülste; gp = glans penis; cl = clitoris; d = Damm; a = After; ug = Eingang zum Sinus urogenitalis oder Vestibulum vaginae; vv = vestibulum vaginae; vh = Vorhaut; hs = Hodensack; d u. r = raphe perinei und scroti; gsch = große, ksch = kleine Schamlippen.

(Text zu Abb. 33 auf S. 33.) Verschiedene Stadien der Entwickelung der äußeren Genitalien bei männl. und weibl. Früchten nach Bayer (loc. cit. p. 77). a) Embryo von 3 mm größter Länge (15—18 Tage alt). Kloakenmembran intakt, vorgebuchtet, von Kloakenwülsten eingefaßt, die cranialwärts ineinander übergehen. Nach Keibel. b) Weibl. Fötus von 6½—7 Wochen. Sinus urogenitalis von dem noch querspaltigen Anus durch einen ganz kurzen primitiven Damm getrennt. Ringförmiger Kloakenwulst. (Nach Keibel.) c) Weibl. Fötus (8½—9wöchentl.). Die Kloakenwülste beginnen sich in Genitalwülste und Analwulst abzugliedern. Der After ist im Begriff, sich aus einer transversalen Fissur zu einer sagittal gestalteten Rinne umzugestalten. (Nach Keibel.) d) Weibl. Fötus (Ende des 3. Monates). Geschlechtswülste und Analwulst durch einen deutlichen Damm getrennt. (Nach Tourneux.) e) Männl. Fötus (3 Monate). Die Geschlechtsfalten verschmelzen von hinten nach vorn zur Bildung der Pars cavernosa urethrae. Eichel am Geschlechtsgliede gut abgesetzt. (Nach Tourneux.) f) Männl. Fötus (10 Wochen). Durch Verschmelzung der Genitalwülste ist das Scrotum gebildet. (Nach Kollmann.) g) Weibl. Fötus (4 Monate). Breiter Damm. Geschlechtswülste (große Labien vom Analwulst beträchtlich abgerückt. Die Geschlechtsfalten (kleine Labien) beginnen hinter jenen zurückzutreten. (Nach Tourneux.)

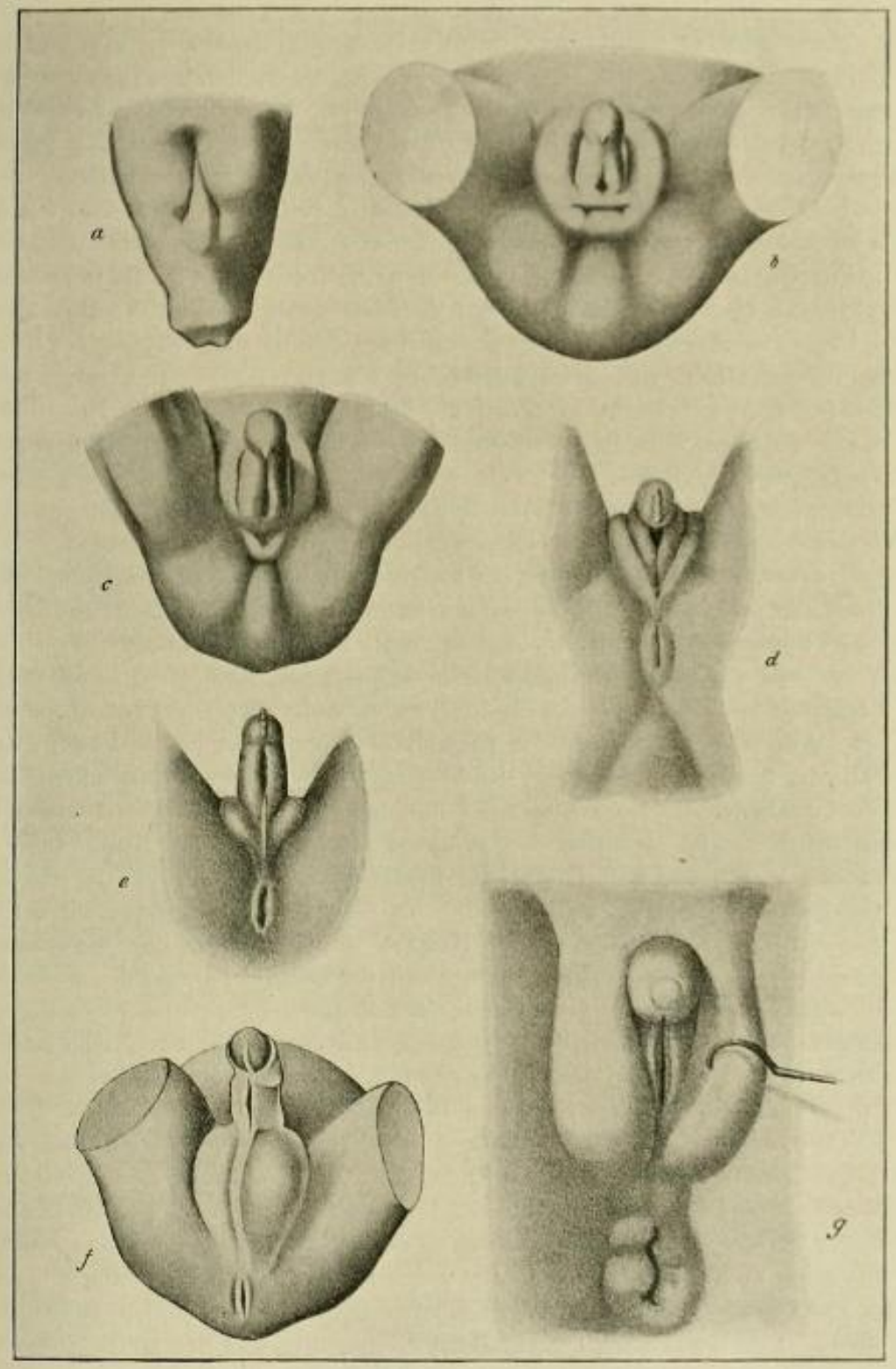
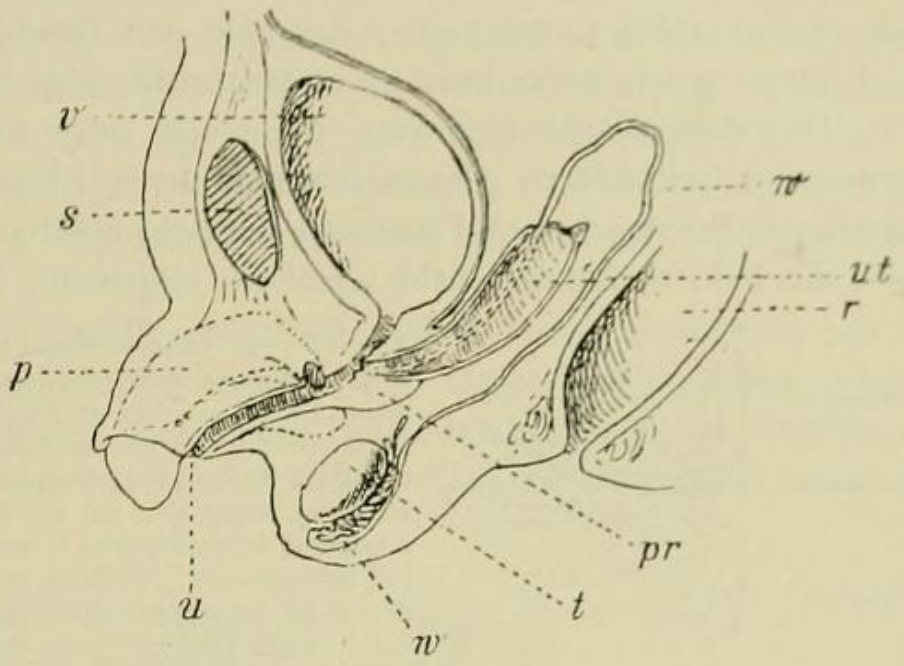


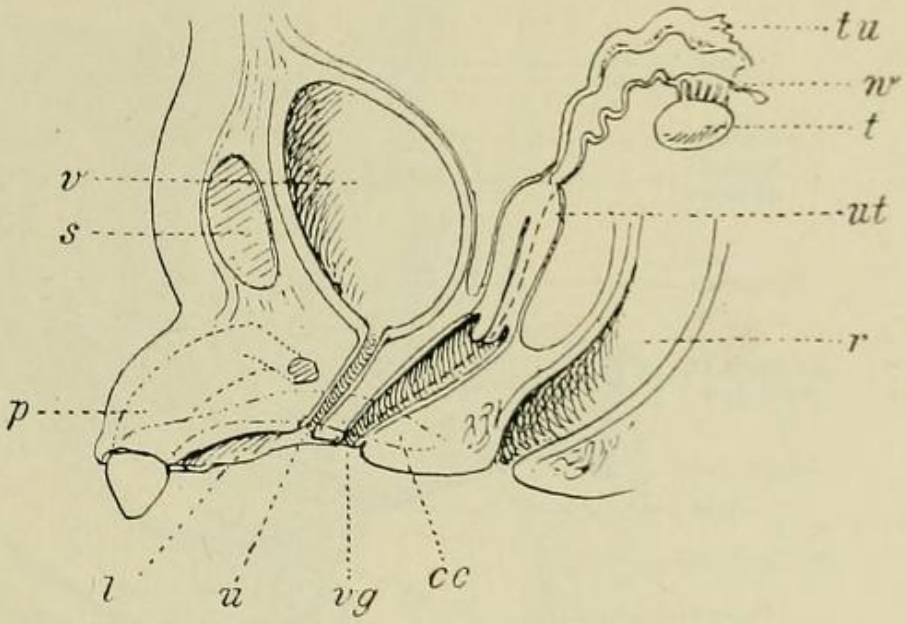
Abb. 33. (Text hierzu siehe nebenstehend S. 32.)

Abb. 46. Drei Typen ausgesprochenen Pseudohermaphroditismus. Halbschematische Darstellung der Geschlechtsorgane bei Pseudohermaphroditismus (kopiert nach Marchand: Die Mißbildungen. Eulenburgs Real-Enzyklopädie d. ges. Heilkunde. III. Aufl. XV. Bd., 1897, p. 578).

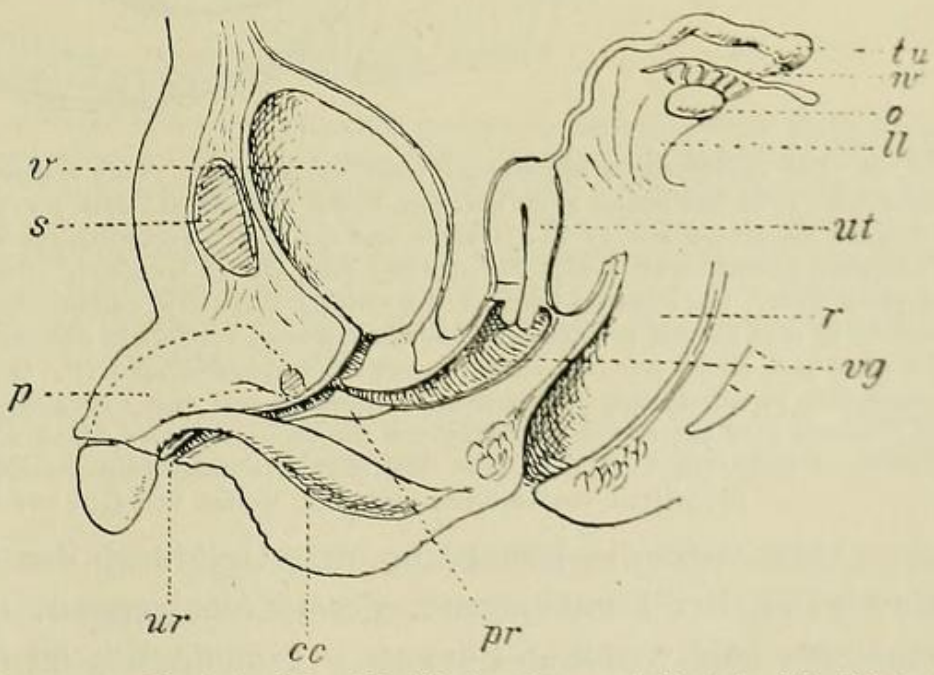
I. Hypospadie geringen Grades mit Uterus masculinus.



II. Pseudohermaphroditismus masculinus mit totaler Hypospadie, offener Mündung d. Vagina, kleinen Schamlippen (e), weiblicher Anordnung des Corpus cavernosum urethrae (vestibuli), fleischigem Uterus mit Tube, Hoden mit Nebenhoden und Vas deferens, welches in der seitlichen Wand der Vagina nach abwärts verläuft.



III. Pseudohermaphroditismus femininus: äußerlich durchaus männliche Genitalien mit geringer Hypospadie; Labia majora vollständig verschmolzen; Corpus cavernosum urethrae von weiblicher Anordnung; Vagina mündet am Colliculus seminalis in die Pars prostatica urethrae. Ovarium rudimentär (mit Zugrundelegung des von Marchand beschriebenen Falles (Moll).



v = Harnblase; s = Symphyse; p = Penis, resp. penisartige Clitoris; u = Urethralmündung; r = Rectum; cc = corpus cavernosum urethrae resp. vestibuli; vg = Vagina; ut = Uterus; pr = Prostata; W = Wolffscher Gang und Rest des Wolffschen Körpers (Parovarium, Nebenhoden, Vas deferens, Hydatide); l = kleine Schamlippen (in II); t = Hoden; tu = Tube (in III abgeschlossen); ll = Ligamentum latum.

lichen Organen auch den Anschein männlicher bieten. (Abb. 57.) Zu dieser Gruppe gehören die Vertreterinnen der lesbischen Liebe, Tribadie, wie z. B. Sappho.

„Esse videbaris, fateor, Lucretia nobis,
Ast tu, proh facinus! Bassa fututor eras,
Inter se geminos audes committere Cunnos,
Mentiturque virum prodigiosa Venus
Commenta es dignum Thebano enigmate monstrum,
Hic ubi vir non est, ut sit adulterium?"
(Martial, Epigramm auf einen weiblichen Scheinzwitter.)

Abb. 57. a = clitoris hypertrophica imperforata; b = orificium urethrae; c = orificium vaginae.

Nach den Überlieferungen des Altertums waren die verschiedengeschlechtlichen äußeren Genitalien bald nebeneinander, bald übereinander gelagert. (Abb. 58, 59.)

(Beob. 28.) Die häufigste Variante bildet Arnaud nach Realdo Colombo (De re anatomica. Venezia 1559, Lib. XV, p. 268) ab: äthiopische Frau, von den Lombarden Zigeunerin genannt, die von unvollkommenem Geschlechte, weder als Mann noch als Frau fungieren konnte. Der Penis übertraf an Länge und Dicke kaum einen Finger, die Vulva war so eng, daß sie kaum einen Finger einließ. Diese Person verlangte Amputation des Gliedes und operative Erweiterung der Vulva, welchen Eingriff jedoch Colombo abschlug.

Abb. 58. Zwei Zwitter mit Juxta- und Supraposition heterosexueller äußerer Geschlechtsteile.

Während Hippokrates, Galen, Lienbatius, Paulus Zacchia, Fabricius ab Aquapendente das Vorkommen von Hermaphroditismus beim Menschen leugneten, erwähnt Aristoteles Zwitter, der jüdische Talmud enthält sogar auf Zwitter bezügliche Vorschriften. Im antiken Rom wurden derartig mißbildete Neonaten als Monstra getödtet nach einem Gesetz des Romulus: „ut

monstrosos partus necare parentibus liceret." Plinius erwähnt, man habe von dem Morden des mißbildeten Kindes bereits Abstand genommen: „Gignuntur utriusque sexus, quos Hermaphroditos vocamus, olim Androgynos vocatos et in prodigiis habitos nunc vero in deliciis." Andere führen als Beweis, daß das antike Rom Zwitter gekannt habe, eine Marmorstatue eines Hermaphroditen von Poliklet an, verschiedene Statuen von Centauren, Satyren, Faunen, Tritonen, Sirenen usw. In Indien soll man barbarisch mit Zwittern verfahren sein. Der Kaiser Konstantin erließ besondere Vorschriften gegen die Hermaphroditen in Konstantinopel. Das Mittelalter beschreibt zahlreiche Fälle von Zwittertum. Nach Rennefort trugen in Surat die Hermaphroditen weibliche Kleidung, mußten aber als Abzeichen einen männlichen Turban auf dem Kopfe tragen.

Abb. 59. Zwitter mit Supraposition der männlichen Genitalien oberhalb der weiblichen.

Arnaud berücksichtigt auch das Zwittertum bei Tieren. Aus seiner Kasuistik des Zwittertums bei Menschen seien folgende Fälle erwähnt:

Arnaud (S. 239) bildet das Geschlechtsglied eines verkannten männlichen Scheinzwitters, Michel Anna Drouart, ab, 1749 in Rouen geboren. (S. auch Beschreibung: Morand, Matthes und Steglehner.

(Beob. 29.) Arnaud („Dissertation sur les Hermaphrodites", Paris 1766), dessen Sammelwerk 30 Jahre lag, ehe es im Druck erschien und eine Fundgrube für die ältere Kasuistik des Scheinzwittertums ist, erzählt folgende interessante eigene Beobachtung (siehe Abb. 60 und 61).

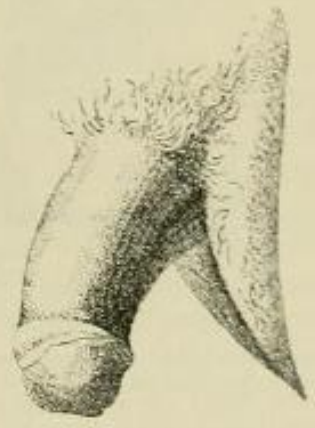


Abb. 60.

Im Jahre 1725 untersuchte er eine unverehelichte Näherin aus Ménilmontant bei Paris, welche allmonatlich schreckliche Leiden ausstand infolge von heftigen Molimina menstrualia: Leibschmerzen, Schwindelanfälle, Erbrechen usw. plagten jedesmal die Kranke. Allgemeinaussehen, Gesichtsbehaarung, Brüste, Stimme männlich, in jeder Schamlefze tastete man Hoden, Nebenhoden und Samenstrang. Hypospadiasis totius penis neben Hypospadiasis partialis scroti. Die Schamlefzen erschienen in ihrem untersten Teile miteinander verwachsen, indem sie eine Art Frenulum labiorum bildeten. Der Damm erschien infolgedessen ausnehmend hoch. Keine Spur einer Raphe zu sehen. Man konnte die Hautdecken zwischen der Analöffnung und der Öffnung in der Schamspalte mit dem Finger ziemlich tief einstülpen in eine nach außen hin durch die Hautdecken ver-

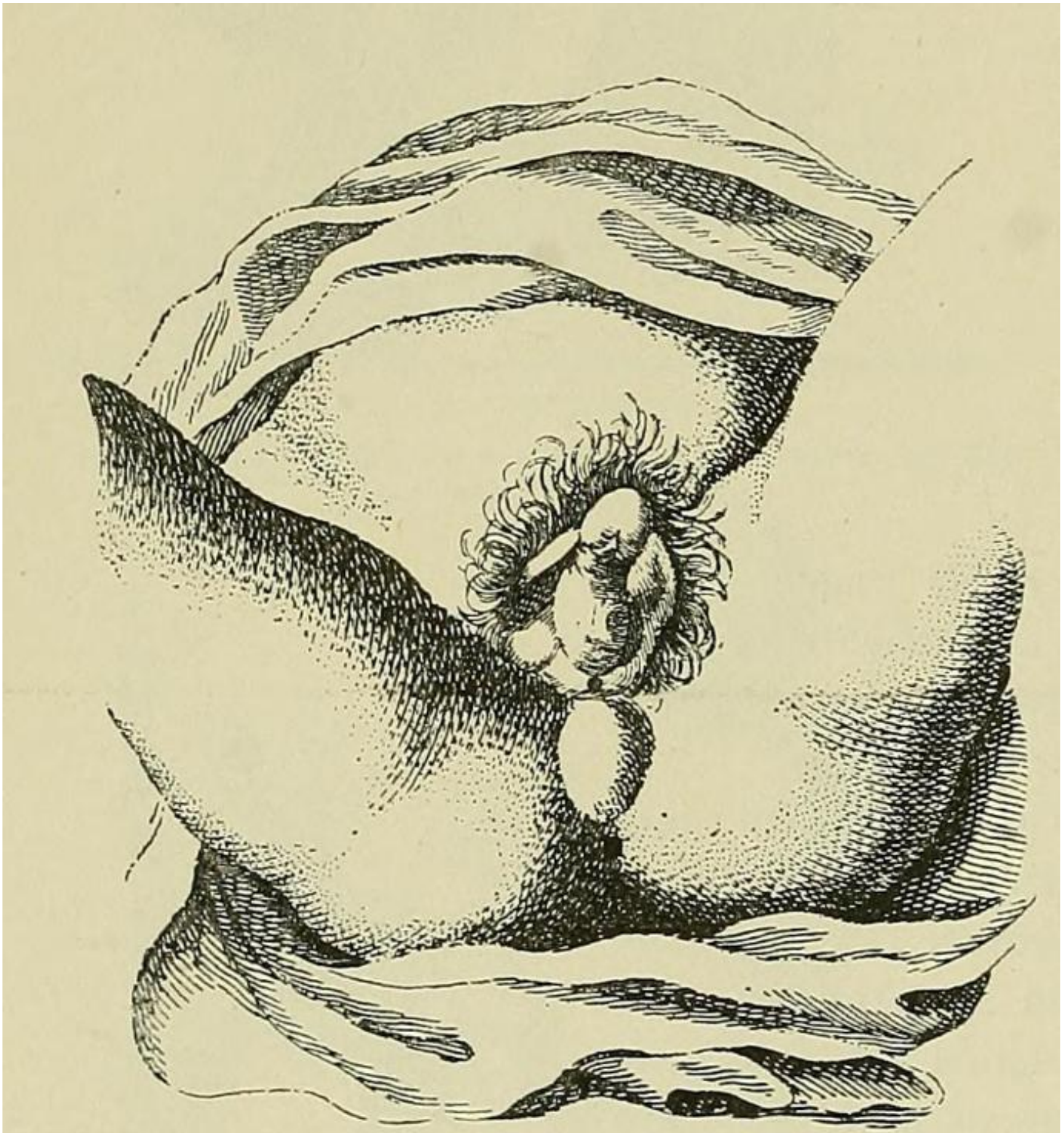


Abb. 61. Vulva eines erwachsenen als Mädchen erzogenen Scheinzwitters von fraglichem Geschlecht. Beobachtung von Arnaud.

jederseits des „Infundibulum", wie der Mann sich ausdrückte, mit Ejakulation einige Tropfen einer klebrigen Flüssigkeit. Der Penis wird sub coitu strotzend und zweimal größer als sonst. Man fand einen schmerzhaften, fluktuierenden Tumor rechterseits im Unterbauche und einen kleineren linkerseits. Am 25./VII. 1896 entfernte Beck mit Bauchschnitt beide Tumoren, die er für sarkomatös entartete Hoden ansah. Die Operation war sehr schwierig wegen zahlreicher Verwachsungen der Tumoren mit der vorderen Bauchwand und den Därmen. Während der Operation gelang es nicht, eine genauere Inspektion der Bauchhöhle vorzunehmen. Der Patient starb am 18. Tage nach der Operation infolge einer Pneumonie. Bei der Sektion fand man einen Uterus von $2^1/_4$ Zoll Länge, dessen Höhle im oberen Teile von Flimmerepithel, im unteren von plattem Epithel ausgekleidet war. Die Tuben enthielten kein Lumen, besaßen aber Ampullae. Unterhalb der Tuben soll man angeblich Ovarien gefunden haben (?v.N.) — Brooks untersuchte mikroskopisch die Tumoren und erklärte sie für Teratome oder Blastoderme; einige Anteile der Tumoren boten das Aussehen und den Bau eines alveolaeren Sarkomes. Man fand weder

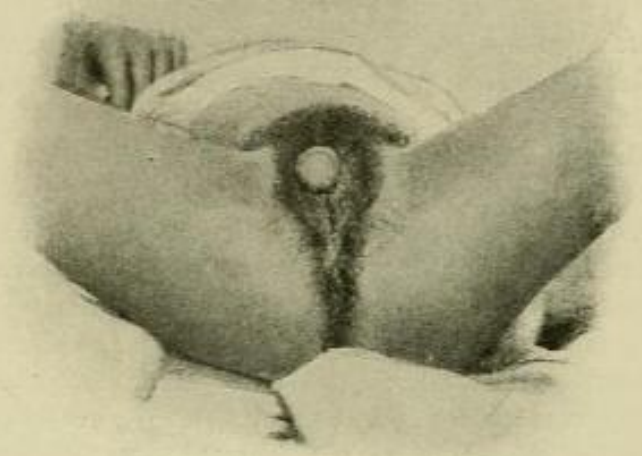


Abb. 66. Vulva eines als Mädchen erzogenen männlichen Scheinzwitters.

Abb. 67. Vulva eines als Mädchen erzogenen männlichen Scheinzwitters.

Bartholinische noch Cowpersche Drüsen, welche ja Produkte der gleichen Anlage sind, also einander entsprechen. Becken und Schambehaarung männlich. Der Patient war untersucht worden von Garrigues, Bangs, Wallach, Irwin, Sprague, Dowling, Johnston, Little, Schöneberg, Cavanagh. Da eine mikroskopische Untersuchung der angeblichen Ovarien nicht ausgeführt wurde, so muß man Mundé (Med. Record 1896, p. 214) und Keller (ibidem) Recht geben, wenn sie das Individuum einfach für einen männlichen Hypospaden ansahen mit Bildung von Uterus und Vagina (s. Abb. 66 u. 67).

Abb. 68. Maria Magdalena Lefort, weiblicher Scheinzwitter im Alter von 16 Jahren. (Béclard.)

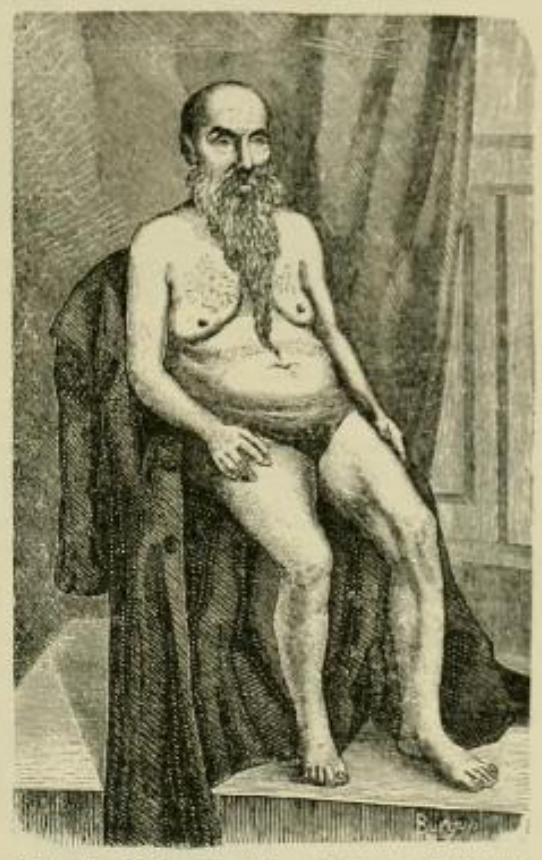


Abb. 69. Maria Magdalena Lefort im Alter von 65 Jahren. (Beobachtung von Béclard.)

105. Beck, Carl: (Newyork. Briefl. Mitteilung 4./III. 1902.) ***(Beob. 74.)*** 24jähr., vier Jahre verheiratete Frau aus Böhmen trennte sich vor kurzem von ihrem Manne. Amenorrhoe, keine Geschlechtsdrüsen getastet, hypospadiasis peniscrotalis, Vagina. Wollustgefühl vorhanden. Geschlecht fraglich.

106. Béclard: („Description d'un individu dont le sexe a quelque chose d'équivoque." Bullet. de la Faculté de Méd. de Paris 1815, N. 2, Vol. IV, p. 273, s. auch: Hufelands Journal d. prakt. Arzneikunde, Dez. 1821, Bd. 47; s. auch: Debierre [loc. cit.], s. auch: Lefort [loc. cit.]). ***(Beob. 75.)***

Dieser Fall ist vielfach diskutiert und mehrfach von französischen Autoren beschrieben worden, weil er in der Tat lehrreich ist. Die beiden Abb. 68 u. 69

Abb. 72. Herr Professor Berthold in Königsberg vermutet bei Untersuchung eines von Heiserkeit befallenen jungen Mädchens auf Grund des laryngoskopischen Befundes eine „Erreur de sexe" und konstatiert bei Untersuchung der Genitalien männliches Geschlecht.

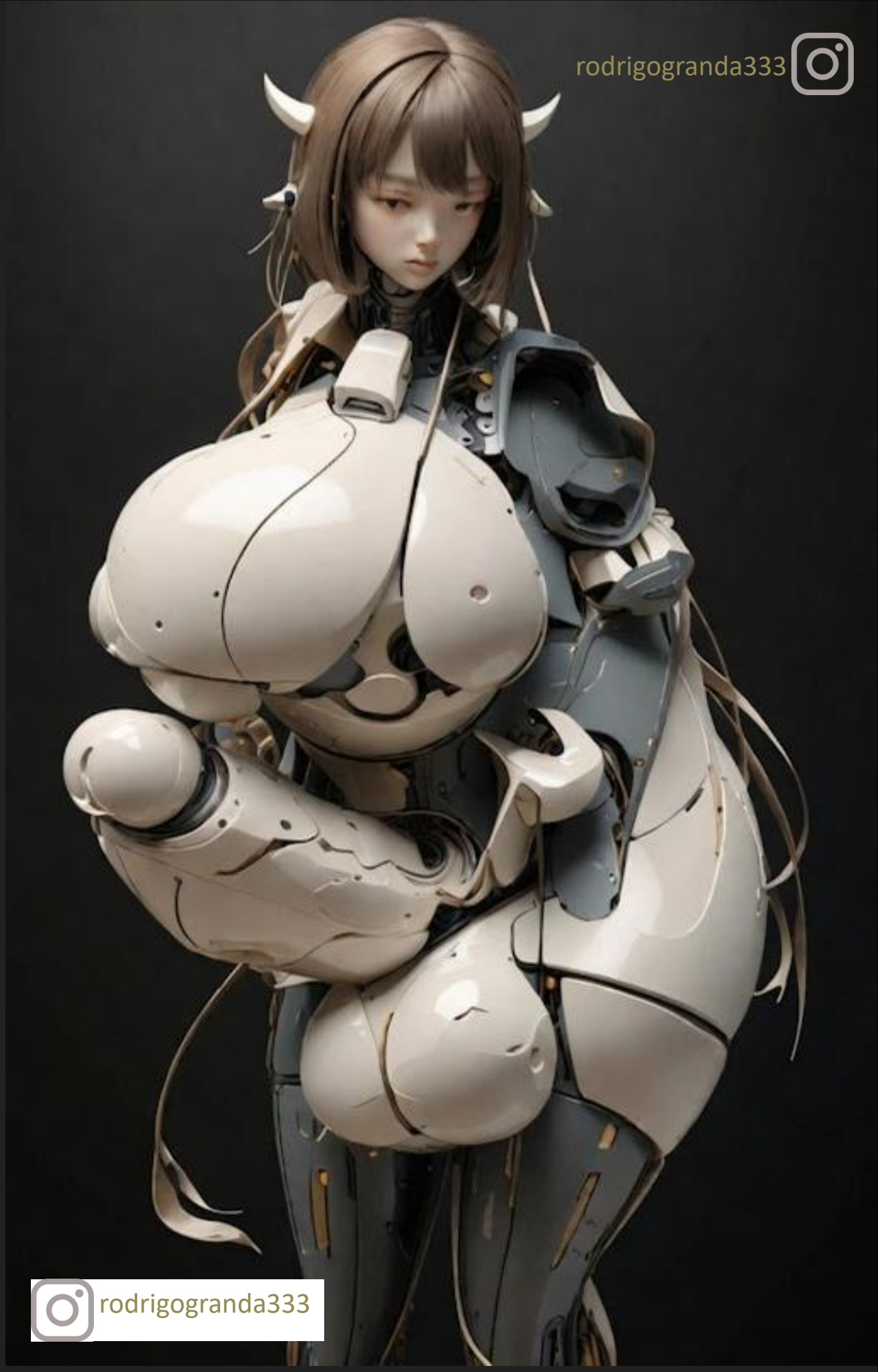
1. Neugebauer FL von. *Hermaphroditismus Beim Menschen*. Werner Klinkhardt; 1908.

5._ Gallery of AI-assisted projects. II

“The Milk Machine”. Supra-Gender, ——series for this issue.
Photo by: Rodrigo Granda (artificial intelligence generated image)

“The Happy Brides #1”. Supra-Gender, ——series for this issue.
Photo by: Rodrigo Granda (artificial intelligence generated image)

“My Laboratory Assistant”. Supra-Gender, ———series for this issue.
Photo by: Rodrigo Granda (artificial intelligence generated image)



“My First Laboratory Baby”. Supra-Gender, ——series for this issue.
Photo by: Rodrigo Granda (artificial intelligence generated image)

“Prototype Number 1 of a Lover”. Supra-Gender, ——series for this issue.
Photo by: Rodrigo Granda (artificial intelligence generated image)

ChatGPT

“The Happy Brides #2”. Supra-Gender, ———series for this issue.
Photo by: Rodrigo Granda (artificial intelligence generated image)

“Only One More Human Being”. Supra-Gender, ——series for this issue.
Photo by: Rodrigo Granda (artificial intelligence generated image)

“Proposal for Gynoid in Bronze”. Supra-Gender, ——series for this issue.
Photo by: Rodrigo Granda (artificial intelligence generated image)

“Proposal for Gynoid Twins #1”. Supra-Gender, ———series for this issue.
Photo by: Rodrigo Granda (artificial intelligence generated image)

“Proposal for Gynoid Triplets”. Supra-Gender, ———series for this issue.
Photo by: Rodrigo Granda (artificial intelligence generated image)

“Proposal for Gynoid Twins #2”. Supra-Gender, ——series for this issue.
Photo by: Rodrigo Granda (artificial intelligence generated image)

“Proposal for a Mature Gynoid”. Supra-Gender, ——series for this issue.
Photo by: Rodrigo Granda (artificial intelligence generated image)

“Manufacture of Gynoid #1”. Supra-Gender, ———series for this issue.
Photo by: Rodrigo Granda (artificial intelligence generated image)

ChatGPT

“Manufacturing of Transgender Gynoid #1”. Supra-Gender, ——series for this issue.
Photo by: Rodrigo Granda (artificial intelligence generated image)

6._ Donna Haraway: A Cyborg Manifesto.

Donna Haraway. A Cyborg Manifesto: Science, Technology, and Socialist-Feminism of the 1980s

A Manifesto for Cyborgs: Science, Technology, and Socialist Feminism in the 1980s

by Donna Haraway

An Ironic Dream of a Common Language for Women in the Integrated Circuit

THIS ESSAY is an effort to build an ironic political myth faithful to feminism, socialism, and materialism. Perhaps more faithful as blasphemy is faithful, than as reverent worship and identification. Blasphemy has always seemed to require taking things very seriously. I know no better stance to adopt from within the secular-religious, evangelical traditions of United States politics, including the politics of socialist-feminism. Blasphemy protects one from the moral majority within, while still insisting on the need for community. Blasphemy is not apostasy. Irony is about contradictions that do not resolve into larger wholes, even dialectically, about the tension of holding incompatible things together because both or all are necessary and true. Irony is about humor and serious play. It is also a rhetorical strategy and a political method, one I would like to see more honored within socialist feminism. At the center of my ironic faith, my blasphemy, is the image of the cyborg.

A cyborg is a cybernetic organism, a hybrid of machine and organism, a creature of social reality as well as a creature of fiction. Social reality is lived social relations, our most important political construction, a world-changing fiction. The international women's movements have constructed "women's experience," as well as uncovered or discovered this crucial collective object. This experience is a fiction and fact of the most crucial, political kind.

Donna Haraway (b. 1944) is an American feminist thinker and Professor Emerita in the History of Consciousness Department and Feminist Studies Department at the University of California, Santa Cruz. She is believed to be a pioneer of cyber feminism and "new materialism", and a central figure in contemporary epistemology, feminist studies of science and technology, and posthumanism.

Liberation rests on the construction of the consciousness, the imaginative apprehension, of oppression, and so of possibility. The cyborg is a matter of fiction and lived experience that changes what counts as women's experience in the late twentieth century. This is a struggle over life and death, but the boundary between science fiction and social reality is an optical illusion.

Contemporary science fiction is full of cyborgs—creatures simultaneously animal and machine, who populate worlds ambiguously natural and crafted. Modern medicine is also full of cyborgs, of couplings between organism and machine, each conceived as coded devices, in an intimacy and with a power that was not generated in the history of sexuality. Cyborg "sex" restores some of the lovely replicative baroque of ferns and invertebrates (such nice organic prophylactics against heterosexism). Cyborg replication is uncoupled from organic reproduction. Modern production seems like a dream of cyborg colonization of work, a dream that makes the nightmare of Taylorism seem idyllic. And modern war is a cyborg orgy, coded by C³I, command-control-communication-intelligence, an $84 billion item in 1984's U.S. defense budget. I am making an argument for the cyborg as a fiction mapping our social and bodily reality and as an imaginative resource suggesting some very fruitful couplings. Foucault's biopolitics is a flaccid premonition of cyborg politics, a very open field.

BY THE LATE twentieth century, our time, a mythic time, we are all chimeras, theorized and fabricated hybrids of machine and organism; in short, we are cyborgs. The cyborg is our ontology; it gives us our politics. The cyborg is a condensed image of both imagination and material reality, the two joined centers structuring any possibility of historical transformation. In the traditions of "Western" science and politics—the tradition of racist, male-dominant capitalism; the tradition of progress; the tradition of the appropriation of nature as resource for the productions of culture; the tradition of reproduction of the self from the reflections of the other—the relation between organism and machine has been a border war. The stakes in the border war have been the territories of production, reproduction, and imagination. This essay is an argument for *pleasure* in the confusion of boundaries and for *responsibility* in their construction. It is also an effort to contribute to socialist-feminist culture and theory in a post-modernist, non-naturalist mode and in the utopian tradition of imagining a world

without gender, which is perhaps a world without genesis, but maybe also a world without end. The cyborg incarnation is outside salvation history.

The cyborg is a creature in a post-gender world; it has no truck with bisexuality, pre-Oedipal symbiosis, unalienated labor, or other seductions to organic wholeness through a final appropriation of all the powers of the parts into a higher unity. In a sense, the cyborg has no origin story in the Western sense; a "final" irony since the cyborg is also the awful apocalyptic *telos* of the "West's" escalating dominations of abstract individuation, an ultimate self untied at last from all dependency, a man in space. An origin story in the "Western," humanist sense depends on the myth of original unity, fullness, bliss and terror, represented by the phallic mother from whom all humans must separate, the task of individual development and of history, the twin potent myths inscribed most powerfully for us in psychoanalysis and Marxism. Hilary Klein has argued that both Marxism and psychoanalysis, in their concepts of labor and of individuation and gender formation, depend on the plot of original unity out of which difference must be produced and enlisted in a drama of escalating domination of woman/nature. The cyborg skips the step of original unity, of identification with nature in the Western sense. This is its illegitimate promise that might lead to subversion of its teleology as star wars.

The cyborg is resolutely committed to partiality, irony, intimacy, and perversity. It is oppositional, utopian, and completely without innocence. No longer structured by the polarity of public and private, the cyborg defines a technological polis based partly on a revolution of social relations in the *oikos,* the household. Nature and culture are reworked; the one can no longer be the resource for appropriation or incorporation by the other. The relationships for forming wholes from parts, including those of polarity and hierarchical domination, are at issue in the cyborg world. Unlike the hopes of Frankenstein's monster, the cyborg does not expect its father to save it through a restoration of the garden; i.e., through the fabrication of a heterosexual mate, through its completion in a finished whole, a city and cosmos. The cyborg does not dream of community on the model of the organic family, this time without the Oedipal project. The cyborg would not recognize the Garden of Eden; it is not made of mud and cannot dream of returning to dust. Perhaps that is why I want to see if

cyborgs can subvert the apocalypse of returning to nuclear dust in the manic compulsion to name the Enemy. Cyborgs are not reverent; they do not re-member the cosmos. They are wary of holism, but needy for connection—they seem to have a natural feel for united front politics, but without the vanguard party. The main trouble with cyborgs, of course, is that they are the illegitimate offspring of militarism and patriarchal capitalism, not to mention state socialism. But illegitimate offspring are often exceedingly unfaithful to their origins. Their fathers, after all, are inessential.

I WILL RETURN to the science fiction of cyborgs at the end of this essay, but now I want to signal three crucial boundary breakdowns that make the following political fictional (political scientific) analysis possible. By the late twentieth century in United States scientific culture, the boundary between human and animal is thoroughly breached. The last beachheads of uniqueness have been polluted if not turned into amusement parks—language, tool use, social behavior, mental events, nothing really convincingly settles the separation of human and animal. And many people no longer feel the need of such a separation; indeed, many branches of feminist culture affirm the pleasure of connection of human and other living creatures. Movements for animal rights are not irrational denials of human uniqueness; they are clear-sighted recognition of connection across the discredited breach of nature and culture. Biology and evolutionary theory over the last two centuries have simultaneously produced modern organisms as objects of knowledge and reduced the line between humans and animals to a faint trace re-etched in ideological struggle or professional disputes between life and social sciences. Within this framework, teaching modern Christian creationism should be fought as a form of child abuse.

Biological-determinist ideology is only one position opened up in scientific culture for arguing the meanings of human animality. There is much room for radical political people to contest for the meanings of the breached boundary.[1] The cyborg appears in myth precisely where the boundary between human and animal is transgressed. Far from signaling a walling off of people from other living beings, cyborgs signal disturbingly and pleasurably tight coupling. Bestiality has a new status in this cycle of marriage exchange.

Haraway, D. (1985). A manifesto for cyborgs: science, technology, and socialist feminism in the 1980s. *Soc. Rev*, 65–107.

Donna Haraway's 1985 essay looks at identities in the era where race, gender, and social class no longer define a human.

"Gender, race, or class consciousness," Haraway writes, "is an achievement forced on us by the terrible historical experience of the contradictory social realities of patriarchy, colonialism, racism, and capitalism." Her seminal essay encourages the reader to try and imagine a different, postgender world of hybrid organisms she calls cyborgs.

> **"Because a cyborg is a hybrid of the machine and the organism, it merges nature and culture into one body, blurring the lines between them and eliminating the validity of essentialist understandings of human nature. This includes claims that there are specific social roles reserved for each of the sexes which are based in biological differences between them, in addition to other differences such as age or race."**

While classical Western ontology is based on the idea of the original unity and fullness, Haraway's cyborgs skip this stage of unity and do not dream of a community based "on the model of the organic family" with its ideal of a heterosexual couple. As an alternative to "natural identification" based on skin colour, sex or social background, Haraway proposes the concept of a "conscious coalition" based on political and poetic affinity between individuals. Only by maintaining self-identification a private and open matter and allowing individuals to choose what groups they belong to themselves, can society avoid creating barriers based on type and ideology.

Written in mid 1980s, *A Cyborg Manifesto* became one of the key texts associated with left postmodernist feminism. Criticizing the very significance of categories like race, gender, sexuality, and class, Haraway's essay anticipated the arrival of third wave-feminism in the 1990s, which remains pertinent to contemporary social and political situation.

> **"...the advent of cybernetics might help in the construction of a world capable of challenging gender disparities."**

7._ "The Age of Spiritual Machines”

MIT 150 | A.I. Lab Lecture Series - God and Computers: Minds, Machines, and Metaphysics - Ray Kurzweil, "The Age of Spiritual Machines" 12/3/1997

KURZWEIL: My wife is annoyed that I skipped the age of emotional machines, but we'll try to cover that as well. It's a pleasure to be here my old stomping grounds. When I was a student here, we had one IBM 1794 which was shared by several thousand students and professors.

You needed some influence to get more than a few seconds a day. And it ran at a quarter of a MIP and had 32K of RAM. Actually, core memory it was back then.

So things have progressed a bit, actually in lock-step to Moore's law, which we'll talk a little bit about. Let me start with a story that some of you may recognize. But I think for a lot of you, it might be before your time.

"The gambler had not expected to be here. But on reflection, he thought, yes, he had shown some kindness in his time. And this place was even more beautiful and satisfying than he had imagined. Everywhere there were magnificent crystal chandeliers, the finest handmade carpets, the most sumptuous foods, and, yes, the most beautiful women who seemed intrigued with their new heaven-mate.

He tried his hand at roulette and, amazingly, his number came up time after time. He tried the gaming tables and his luck was nothing short of remarkable, winning game after game. Indeed, his winnings were causing quite a stir, attracting much excitement by the attentive staff and by the beautiful women.

This continued day after day, week after week, with the gambler winning every game, accumulating bigger and bigger winnings. Everything was going his way. He just kept on winning and winning. And week after week, and month after month, the gambler's winning streak seemed unbreakable.

After a while this started to get tedious. The gambler was getting agitated. The winning was starting to lose its meaning.

But nothing changed. He just kept on winning every game, until one day, the now anguished gambler turned to the angel who seemed to be in charge and said that he couldn't take it anymore. Heaven was not for him after all. He had really figured he was destined for the other place after all. And indeed, that's where he wanted to be. But this is the other place, came the reply."

That's my recollection of an episode of the *Twilight Zone* that I saw as a young child. Anybody here happen to see that episode? I think the title might have been something like, be careful what you wish for. Or at least that's what I would call it.

And as this engaging series was wont to do, it illustrated many of the paradoxes of human nature. We like to solve problems, but we don't want them all solved. Not too quickly, anyway. We're more attached to the problems than the solutions-- maybe to the process of solving them.

Take death, for example. A great deal of our effort goes into avoiding it. We make extraordinary efforts to delay it and, indeed, often consider its intrusion as a tragic event. Yet we would find it hard to live without it.

Death gives meaning to our lives. It gives importance and value to time. Time would become meaningless if there were too much of it. If death were indefinitely put off or even just put off for a very long time in human terms, the human psyche would end up-- well, like the gambler in the *Twilight Zone*.

Now, we don't yet have this predicament. We have no shortage today of either death or human problems. Few observers feel that the 20th century has left us with too much of a good thing. There is growing prosperity fueled, not incidentally, by information technology. But the human species is still challenged with issues and difficulties not altogether different than those it has struggled with from the beginning of our recorded history.

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The 21st century will be different, in my view. The human species, along with the computational technology that it initiated the creation of, will solve age-old problems of need, if not desire. And we'll be in a position to change the nature of mortality in a post-biological future. I'll explain what I mean about that a little bit later.

Now, do we have the psychological capacity for all the good things that await us? Probably not, but that might change as well. Before the next century is over, human beings will no longer be the most intelligent or capable type of entity on the planet.

Now, as the abstract pointed out, let me take that controversial statement back. The truth of that statement depends on how we define human, and that will be a key issue in the next century. Unlike the 20th century, the primary political and philosophical issue will be the definition of who we are.

But I'm getting a little bit of ahead of myself. To approach the 21st century, we need to start from the present. If we jump to the endgame, it's a little unsettling and maybe not quite believable. But if we take it step by step, I think we'll see the inexorable logic of the next century.

This last century has seen enormous technological change and the social upheavals that go along with it, which few pundits circa-1899 foresaw. And the pace of change is accelerating, and it has been since the inception of invention. And as we will discuss, this acceleration is an inherent feature of technology. That's what makes technology different from just simply the use of tools.

There are a lot of animals that use tools, or at least there are some, but those tools don't evolve with time. Our tools evolve. The genes of that evolution are really our own knowledge base, which we use to advance technology. And that's an inherent nature of technology.

And the result will be far greater transformations in the first two decades of the 21st century than we saw in the entire 20th century. But to appreciate the logic of this, we have to go back and start with the present. Now, computers today exceed human intelligence in a broad variety of intelligence yet very narrow domains, such as playing chess, diagnosing certain medical conditions, timing buy-and-sell decisions, guiding cruise missiles, and so on.

Yet human intelligence remains far more supple and flexible. Computers are still unable to tell the difference between a dog and a cat, although I-- actually, I've been saying that for years. I think we probably could program a neural net today to make that distinction. But computers can't tie a pair of shoelaces, they can't describe the objects on a crowded kitchen table, write a summary of a movie, recognize humor, or provide other subtle tasks in which their human creators excel.

Now, one reason for this disparity in capabilities is that our most advanced computers still remain far simpler devices than the human brain by a factor of approximately a million, give or take a couple of orders of magnitude, depending on what assumptions you use. But computers, as is well known, have been doubling in speed and capacity or complexity-- which, it's important to point out, is actually a quadrupling of computational ability-- every 18 months since the inception of calculating devices at the beginning of the century.

And this trend will continue. I'll come back to Moore's law in a moment. But if we extrapolate that out, computers will achieve the computing speed and capacity of the human brain by around the year 2020. Now of course, achieving the basic complexity and capacity of the human brain will not automatically result in computers matching the flexibility and range of human intelligence.

The organization and content of these resources that is the software of intelligence is equally important. And in a few minutes, I'll talk about at least one scenario that I think is credible to achieve this. Once a computer achieves a human level of intelligence, it will necessarily roar past it. Since inception, computers have been far more powerful than computers in memory and speed.

The computer can remember billions or trillions of facts with extreme reliability, can extract information from billions of items in a database in a matter of seconds. We're hard pressed to remember a handful of phone numbers or the directions to get here. The combination of human-level intelligence in a machine-- with the fact that electronic circuits are a million times faster than neural circuits-- combined with the computer's inherent superiority in speed and reliability of memory will be a very formidable combination.

Now as I mentioned, electronic circuits are a million times faster than neural circuits, so once a computer achieves the human level of ability in understanding abstract concepts, recognizing patterns, the ability to read, for example, it'll be able to apply this ability to a knowledge base of all human acquired knowledge.

In fact, there's a project in Kyoto at ATR, Advanced Technology Research Laboratory, where they're building a billion neuron neural net. And they plan to teach it the ability to read. And then we'll basically set it loose on all published human literature, at least that's available electronic form.

Now, a common reaction to the proposition that computers will seriously compete with human intelligence is to dismiss this specter based primarily on an examination of contemporary capability. I mean after all, when you interact with your personal computer, its intelligence seems limited and brittle, if it seems intelligent at all. It's hard to imagine one's personal computer having a sense of humor, or holding an opinion, or displaying any of the other endearing qualities of human intelligence.

But the state of the art in computer technology is anything but static. Computer capabilities are emerging today that were considered impossible one or two decades ago.

Examples include the ability to accurately transcribe normal continuous speech, which all three leading companies in speech recognition-- Dragon, my own company, Kurzweil Applied Intelligence, and IBM-- recently demonstrated at COMDEX. The ability to intelligently respond to natural language, to recognize patterns in medical tests, such as electrocardiograms and blood cell tests with an accuracy exceeding human physicians. And of course, to play chess at a world championship level.

In the next decade, we'll see translating telephones. My company, Kurzweil Applied Intelligence, was recently acquired by Lernout and Hauspie that has language translation software. And we're putting together a translating telephone with continuous speech recognition, text-to-text language translation, and text-to-speech synthesis. And we plan to hold a demonstration early in 1998, where you'll be able to call up somebody in Germany and hold a conversation in real time with your speech translating to German and vice versa.

In the second decade of the next century, it'll become increasingly difficult to draw any clear distinction between the capabilities of human and machine intelligence. Evolution has been seen as a billion-year drama that led inexorably to its grandest creation-- human intelligence. The emergence in the early 21st century of a new form of intelligence that can compete with and, in some arenas at least, exceed that of human intelligence will be, in my view, a development of greater import than anything we saw in the 20th century.

Now, this specter is not yet here. Computers today are still a great deal simpler than the human brain. But with the emergence of computers that really rival and exceed the human brain in complexity will come a corresponding ability of machines to understand and respond to abstractions and to subtleties.

Human beings appear to be complex in part because of their competing internal goals-- things we call values, emotions, represent and engender subgoals that often conflict and, in my view, are an unavoidable byproduct of the complexity that is human nature. As computers achieve a comparable level of complexity and as they are increasingly derived from models of human intelligence, they too will necessarily utilize goals that appear to exhibit values and emotions-- of course, not always the same values and emotions that humans exhibit.

And a variety of philosophical issues will emerge. Are computers thinking or are they just calculating? Conversely, are human beings thinking or are we just calculating? Presumably our brains follow the laws of physics so they must be machines, albeit very complex ones. Is there an inherent difference between machine thinking and human thinking? To put it another way, once computers are as complex as the human brain and can match the human brain in the subtlety and complexity of thought, are we to consider them conscious?

It's a difficult issue to even pose. Some philosophers feel it's not a meaningful question. Other philosophers feel it's the only meaningful question in philosophy. And the question actually goes back to Plato's time. They had debates on this issue, and imagined machines of the complexity of the human brain made up of pistons, and wires, and levers, and so on. But as we actually have machines that genuinely appear to possess volition and emotional responses, this issue will become increasingly compelling.

Now let's talk for a moment about what it will take to achieve just the hardware capacity of the human brain. As is well known, computers have been doubling in speed and also the density of computation, which if you have a massively parallel neural net actually means you can put twice as many neurons, run them twice as fast, which is really a quadrupling of the number of neural connection calculations you can do per second, every 18 months.

Computer memory today is about a billion times more powerful for the same cost that it was when I was born. And if the automobile industry had made as much progress in the last half century, cars today would cost a hundredth of a cent and go faster than the speed of light.

Now, this exponential progress is called Moore's law. How many people here are familiar with Moore's law? I expect a lot of hands to go up here.

Intel chairman Gordon Moore first commented on this, actually commented in the mid-'70s. He said it was 24 months. In the mid-'80s, he revised that to 18 months. That's a corollary of a broader law-- since nobody's claimed it, I've named Kurzweil's law-- on the exponentially quickening pace of technology that goes back to the dawn of recorded history. I mean, not much happened in, say, the 10th century technologically speaking. There may have been one or two things.

In the 18th century, quite a bit happened. In the 19th century, a lot happened. And now in the 20th century, we have major paradigm shifts in a few years' time.

Now, some observers have commented that exponential trends can't go on forever. And we have lots of examples of exponential trends that go along and then just hit a wall, like a species happening upon a new habitat, is the classical example. Its numbers will multiply geometrically for a time, and then it hits a wall and may even go in reverse when it exhausts the supply in its new habitat. But it would be highly premature to predict the end of Moore's law anytime soon.

The chip companies themselves have said they can confidently foresee 20 more years of Moore's law, just using conventional approaches. That alone is enough to put the computational capacity of the human brain into a $1,000 personal computer.

Moreover, today's chips are essentially flat with only one layer of circuitry, whereas the brain uses all three dimensions. We live in a three-dimensional world. Why not use all three dimensions? And circuits, particularly superconducting circuits that don't generate heat, will enable the development of chips-- or I should say cubes-- with thousands of layers of circuitry and also smaller component geometries, which will multiply computing capacity by a factor of millions.

There are more than enough computing technologies to assure the continuation of Moore's law for a very long time. Now, the human brain has about 100 billion neurons. On average, they have about a thousand connections from one neuron to the next. That's 100 trillion connections. Each connection's capable of a computation. So that's a hundred trillion-fold parallelism.

These circuits are very slow. I mean, if we just copied the human brain in electronic form, it would run a million times faster because the neural circuits run 200 calculations per second. Typical electronic circuits, 200 million calculations a second. But 200 times 100 trillion is 20 million billion calculations per second. And that's about what you get in the year 2020 in a $1,000 personal computer if you just track Moore's law.

And again, the chip companies feel that they can do that just with conventional approaches, not even assuming things like crystalline computers, and DNA computers, and optical computers, and quantum computers, which is itself an interesting subject because it's a whole different type of computation. But I won't get sidetracked on that. Oh, and by the way, if we were to harvest even a fraction of the unused computes on the internet, and there are some proposals for doing that, we could create virtual super computers with the computing capacity of the human brain today.

Now, as we achieve each new level of hardware capacity, new software technologies become feasible. And in fact, it becomes a compelling economic pressure to create software that matches the hardware capability. And one of the exciting things about Moore's law is, every time that that screw turns, whole new business opportunities become available.

As I mentioned, continuous speech with natural language understanding is now feasible. A product that Kurzweil Applied Intelligence showed at COMDEX recently, which got one of the four best of COMDEX citations, allows you to say things like, I enjoyed my trip to Belgium last week. Make this paragraph two points bigger and change it's font to Arial. I hope to go back to Belgium soon.

And it actually figures out that that second sentence is a command, and then carries it out. And you can say the commands in any way that you want.

[...]

"['Spiritual machines'] will still not possess the unique characteristics of the human brain, the ability for conscious rational self-reflection."

8._ Consciousness and Intelligence

1. I have a clear and distinct idea of the mind as a thinking, non-extended thing.
2. I have a clear and distinct idea of body as an extended, non-thinking thing.
3. Therefore, the mind is really distinct from the body and can exist without it.

René Descartes: The Mind-Body Distinction

The mind-body problem is a central issue in the philosophy of mind. It is, roughly, the problem of explaining how mind and body can causally interact. That they interact seems exceedingly obvious: my mental states, such as for instance my desire for a cold drink, do seem capable of producing changes in my body, such as the bodily motions required for walking to the fridge and retrieving a bottle of water. Likewise, certain physical states seem capable of producing changes in my mind: when I stub my toe on my way to the fridge, for instance, this event in my body appears to cause me pain, which is a mental state. For Descartes and his followers, it is notoriously difficult to explain how mind and body causally interact. After all, Cartesians are substance dualists: they believe that mind and body are substances of a radically different type (see Descartes: Mind-Body Distinction). How could a mental state such as a desire cause a physical state such as a bodily motion, or vice versa, if mind and body have absolutely nothing in common? This is the version of the mind-body problem that Cartesians face.

Gottfried Leibniz: Philosophy of Mind

Psychodynamic Psychology

Jennifer Walinga

Consciousness is the *awareness of the self in space and time*. It can be defined as human awareness of both internal and external stimuli. Researchers study states of human consciousness and differences in perception in order to understand how the body works to produce conscious awareness. Consciousness varies in both arousal and content, and there are two types of conscious experience: **phenomenal**, or *in the moment*, and **access**, which *recalls experiences from memory*.

First appearing in the historical records of the ancient Mayan and Incan civilizations, various theories of multiple levels of consciousness have pervaded spiritual, psychological, medical, and moral speculations in both Eastern and Western cultures. The ancient Mayans were among the first to propose an organized sense of each level of consciousness, its purpose, and its temporal connection to humankind. Because consciousness incorporates stimuli from the environment as well as internal stimuli, the Mayans believed it to be the most basic form of existence, capable of evolution. The Incas, however, considered consciousness to be a progression, not only of awareness but of concern for others as well.

Sigmund Freud divided human consciousness into three levels of awareness: the *conscious*, *preconscious*, and *unconscious*. Each of these levels corresponds to and overlaps with Freud's ideas of the id, ego, and superego. The **conscious** level consists of *all those things we are aware of,* including things that we know about ourselves and our surroundings. The **preconscious** consists of *those things we could pay conscious attention to if we so desired, and where many memories are stored for easy retrieval*. Freud saw the **preconscious** as *those thoughts that are unconscious at the particular moment in question, but that are not repressed and are therefore available for recall and easily capable of becoming conscious* (e.g., the "tip of the tongue" effect). The **unconscious** consists of *those things that are outside of conscious awareness, including many memories, thoughts, and urges of which we are not aware.* Much of what is stored in the unconscious is thought to be unpleasant or conflicting; for example, sexual impulses that are deemed "unacceptable." While these elements are stored out of our awareness, they are nevertheless thought to influence our behaviour.

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Which theory of consciousness?

Some of the first theories of consciousness put forward by cognitive psychologists were based on the mind-as-a-computer metaphor. According to these theories, the mind is a computer that processes information coming from external or internal sources in order for the system to provide appropriate behavioral responses. The information flows from one module of the mind to the next, until it reaches the last module of the chain: consciousness. Following the computer metaphor of the mind, this last module has been variously termed as "operating system" (Johnson-Laird 1988), "central processor" (Umiltà 1988), or "supervisory system" (Shallice 1988).

The mind-as-a-computer approach has certainly yielded various and positive results in psychological research on the mind. For example, it can tell how long it takes for information to become conscious (Cleeremans and Sarrazin 2007; Libet 2004), the different levels of processing information involved by conscious versus unconscious processes (Dehaene 2009; Kouider and Dehaene 2007), the different consequences that consciously versus unconsciously processing information has on memory, learning, etc. However, it is not the most appropriate approach when studying conscious experience because it can neither provide the adequate level of analysis of the phenomenal aspect of consciousness, nor account for how conscious experience allows a person to develop a sense of being an independent individual.

The mind-as-a-computer approach cannot provide the adequate level of analysis of the phenomenal aspect of consciousness simply because the latter is outside the scope of investigation of the former. The mind-as-a-computer approach analyzes the processes involved in transforming and elaborating information, the time needed to process information, how information is transformed, transmitted and disseminated, and so on, but not why these processes give rise to phenomenal experience.

The mind-as-a-computer approach cannot account for how a person develops the sense of being an independent individual because its main concern is to analyze the piece of information processed by the person, or how this piece of information is transformed, rather than to analyze the implications that it has for a person to consciously experience the piece of information that he is processing.[5]

Adopting Negrotti's terminology (1997, 1999), we can say that the observation level of the mind-as-a-computer approach is that of the information processed, or that of the processes involved in processing information, not that of the person processing the information. As such, the

[5] It should be noted that processing information always has some kinds of implications for the person who consciously experiences it. This happens even when a person processes information in an "impersonal" or "detached" way, such as when he mimics the behavior of a computer or robot. In fact, the conscious experience of "impersonality" implied by the act of mimicking a computer, allows the person to understand, highlight or, alas, deny the difference existing between him and a computer or robot.

mind-as-a-computer approach cannot account for how a person develops and transforms through consciously processing information, but only for how some parts of a person's organism—sense organs, attention, memory, central processor, and so on—process information. As various researchers (Cisek 1999; Edelman 1989; Freeman 1999; Searle 1980, 1984, 1992) have highlighted, most of the problems raised by the mind-as-a-computer approach are due to the fact that this approach considers information as made up of ready-made symbols representing the external world, whose meanings derive not so much from the personal history of the person, the importance they have for the person, his relations with other entities, but from the researcher's research goals.

Therefore, whoever wants to study consciousness has to change perspective and no longer consider information, as well as the person processing it, as ready-made entities. On the contrary, one needs to investigate how a person develops, changes and transforms by processing information, why and how something becomes information for a person, and how something acquires a meaning for a person.

An important contribution in this perspective was offered by Baars (1988). Baars uses the word information in a psychological adapted version of the Shannonian, conventional sense of reduction of uncertainty in a set of choices defined within a stable context. Consciousness is informative in the conventional sense because it reduces the uncertainty introduced by novel and unpredictable stimuli. The uncertainty is reduced by means of adaptive and learning processes, which consciousness triggers and facilitates by globally broadcasting—via a *Global Workspace*—the stimulus message to the whole system of (unconscious) specialized processors. The role of consciousness in reducing uncertainty is evidenced by the phenomenon of the redundancy effects: after a new event has been adapted to and learned, whether via repeated processing or practice, the event fades from consciousness. That is, consciousness completes its function once it has reduced the uncertainty introduced by a new event. Baars also observes that this tendency to reduce conscious access by adaptation is counterbalanced in human beings by an opposing natural tendency to increase conscious access by actively searching for informative stimulation.

Baars' usage of the term information differs slightly from the conventional one in that it is adapted to the psychological contexts, which are more complex and less stable than the one-dimensional message context of classical information theory. Baars defines a psychological context as a system (or groups of specialized processors) that constrains conscious content without itself being conscious. Psychological contexts are not totally stable, but rather continuously change by adapting to informative input whenever possible. Adaptation to conscious input implies the creation of new (unconscious) contexts, which then shape and constrain later conscious

experiences: "In a sense, context consists of those things to which the nervous system has *already* adapted; it is the ground against which new information is defined" (Baars 1988, p. 197). Every event can then be said to be experienced with respect to prior conscious events. In this view, adaptation and learning are processes that develop unconscious contexts that cause us to experience the same event in new and different ways. Therefore, conscious experience continuously modifies the person and the way he processes information, in the sense that the person can never experience the same object twice in the same way.

Baars' model is certainly highly valuable in explaining how the person develops and changes by processing information, as well as in explaining a number of cognitive processes such as the person's access to information, voluntary control, and reportability. However, Baars' model has the major drawback of not directly addressing the question of why conscious experience has the peculiar phenomenal aspect and quality it has: if conscious experience had not the phenomenal aspect it has, would it still be able to perform its function (that is, to reduce uncertainty)? As Chalmers (1996) observes, the best that Baars' theory can do is to state that the information processed within the Global Workspace is experienced because it is globally accessible. But the question of why global accessibility should give rise to conscious experience, remains unanswered. Not directly addressing the problem of the phenomenal aspect of consciousness, but rather addressing derivative characteristics of conscious states (such as being "largely widespread and broadcast"), Baars' model can explain the latter, but not the former.

In this view, the Integrated Information Theory of consciousness (IIT) put forward by Tononi (2008, 2012) and Tononi and Koch (2015), has certainly the advantage over the various theories of consciousness, of directly tackling the phenomenological aspects of consciousness. IIT starts by phenomenologically identifying the essential properties of consciousness (or "axioms"), then derives a set of postulates that specify the requirements that must be satisfied by any physical system to account for such properties, and finally develops a detailed mathematical framework in which the properties are defined precisely and made operational. IIT identifies five main essential properties of consciousness (Oizumi et al. 2014; Tononi and Koch 2015): (1) intrinsic existence: as Descartes realized, we are absolutely sure that each conscious experience exists and is real; (2) composition: consciousness is structured, composed of many phenomenological distinctions (within the same experience, we may distinguish various features and objects); (3) information: each conscious experience is informative in that it differs from other possible experiences (an experience of darkness is what it is because, among other things, it is not filled with light, there are no objects, etc.); (4) integration:

consciousness is unified, each conscious experience is irreducible to non-interdependent subsets of phenomenal distinctions (we experience a whole visual scene, not the left side of the visual field independent of the right side); (5) exclusion: each conscious experience excludes all others, at any given time there is only one experience having its full content.

IIT postulates parallel the phenomenological properties of consciousness, and help directly link consciousness to information. IIT postulates are used to define (among other things) information in Batesonian terms as a difference that makes a difference to a system (from its intrinsic perspective, not relative to an external observer), and integrated information (Φ) as the amount of information generated by a complex of elements, above and beyond the information generated by its parts. IIT's main claim is that consciousness is integrated information. More specifically: "(1) the quantity of consciousness corresponds to the amount of integrated information generated by a complex of elements; (2) the quality of experience is specified by the set of informational relationships generated within that complex" (Tononi 2008, p. 216).

Despite its advantages, IIT has raised several concerns (Cerullo 2015; Jonkisz 2015; Searle 2013). One of the main difficulties with IIT derives from its identification of consciousness with integrated information. In fact, taken to extremes, this claim holds that any system that has integrated states of information is conscious. This leads to some counterintuitive consequences, such as the attribution of consciousness to simple artifacts, such as photodiodes: "Strictly speaking, then, the IIT implies that even a binary photodiode is not completely unconscious, but rather enjoys exactly 1 bit of consciousness" (Tononi 2008, p. 236).

As Mudrik et al. (2014) observe, in some cases this claim of IIT is untenable. Mudrik et al. identify four integrative processes that occur without consciousness: short-range spatiotemporal integration, low-level semantic integration, single sensory (vs. multisensory) integration, and previously learned (vs. new) integration. This shows that not all informational states are conscious, and that information integration, even if it turns out that it is most probably necessary for consciousness, is not sufficient. Additional conditions must therefore be invoked in order to account for consciousness.

Jonkisz (2015) identifies these conditions by assuming a biological perspective. This perspective allows Jonkisz to better circumscribe the concept of information within the context of conscious studies. In fact, the biological perspective makes one realize that, when dealing with consciousness, the only kind of information that is important, is the one that is *functionally relevant* for a biological system. And this kind of information is formed:

> in the unique and particular interactions occurring between the system (e.g., its sensory organs located on its body and in the relevant area in the brain) and its environment (e.g., photons, sound waves, chemicals) or just between parts of the system itself, taken in isolations (e.g., its memory subsystems, insofar as these are able to induce states internally) (Jonkisz 2015, p. 9).

As Jonkisz (2015) observes, this kind of information is evolutionarily embedded, socially altered, and subjectively grounded. In fact, biological systems evolve in interaction with their environment and with other creatures. Consequently, their bodies are attuned to the specific informational resources available in the ecological niche of their ancestors. Furthermore, the way in which information is interpreted by biological systems may also be socially altered. Finally, the information processed by biological systems is always individually grounded or private, in the sense of being determined by individual-related factors. In conclusion, the kind of information functionally relevant for a given biological system is always "individuated," with respect to just the system. In addition to this condition, Jonkisz specifies that information must be pragmatically useful, that is, it must help coordinate the system's action at a given moment in time. According to Jonkisz, overall these conditions place empirically justified constraints on IIT, and help avoid the problematic and counterintuitive consequences of a radical extension of consciousness to processes and systems hitherto considered non-conscious or unconscious.

IIT has also raised some other concerns related to its choice to limit the understanding of consciousness to its phenomenal essential properties. IIT considers the phenomenal essential properties of consciousness, so to say, in themselves, without any connection to the possible cognitive functions they may have for the system (such as planning and initiation of behavior). This choice has led some critics to define IIT as a theory of "protoconsciousness" or "non-cognitive consciousness," rather than a theory of "cognitive-consciousness" (Cerullo 2015). According to this criticism, IIT tackles a kind of consciousness that is very general and differs from the one tackled by cognitive neuroscience, psychology and neurology. While the latter kind is supposed to have evolved in association with the other cognitive functions of the system (such as memory and the executive function) in order to assist the system in controlling and guiding its own behavior, the former kind does not necessarily imply a functional role in guiding the system's behavior, and lacks the cognitive properties usually associated with such a functional role. Indeed, IIT does not intend to explain *why*, to what purpose, a system or complex of elements should generate integrated

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information (and ultimately consciousness); rather, IIT intends to explain *how* the generation of integrated information by a system leads to consciousness. This renders IIT useless in accounting for the possible functions of consciousness, as well as for other cognitive functions of the system (memory, attention, etc.) associated with consciousness. In turn, this makes it difficult for IIT to account for the existence of the specialized brain circuits underpinning such cognitive functions, and for important functional dissociations between brain regions, such as the different role played by frontal and parietal cortex in guiding attention (Buschman and Kastner 2015).[6] It is true that IIT acknowledges that "integrated information requires networks that conjoin functional specialization (…) with functional integration" (Tononi 2010, p. 312), but IIT does not explain why precisely those specialized circuits, and not others, exist.

Adopting a biological perspective helps solve all these difficulties. This is because in a biological perspective, consciousness (and any other cognitive function, as well as the underpinning neurobiological processes) did not originate for nothing and from nothing: rather it evolved from processes and brain circuits that already existed, and it was selected for its capability to support the system in controlling its behavior. As William James (1890/1983, p. 147) observed, consciousness evolved to function as a selective mechanism able to control a nervous system that had grown "too complex to regulate itself." In fact, consciousness provides a means to represent (in the sense of standing for) the *whole* system in a condensed (albeit partial) and unified way: that is, it supplies the system with the sense of being a unique, single entity, which evolutionarily culminates in the appearance of self-consciousness. This allows the system to "observe" itself and the world surrounding it from the vantage point of the perspective of a single entity (as opposed to a set of separated, disconnected parts), which in turn implies the possibility for the system to control itself from that single perspective.

It could be argued that these biological and evolutionary considerations are not decisive in explaining why consciousness is what it is, and why it has the function it has. After all, a different evolutionary history could have led to a different form of consciousness. However, the form of consciousness we are dealing with in this article, that is, human consciousness, undeniably has some relevant evolutionary advantages (for example, in terms of levels of autonomy) over other

[6] "Parietal cortex (LIP) encodes a 'saliency' map of the visual scene, encoding which locations in space are of potentiality high significance. Such saliency is largely defined by the properties of the stimuli (…) In contrast, neurons in frontal cortex carry information about task-relevant stimuli, not necessarily the most salient stimulus." (Buschman and Kastner 2015, p. 131).

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OPINION PAPERS AND COMMENTARIES

Consciousness: a unique way of processing information

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forms of consciousness, such as non-human animal consciousness. As such, biological and evolutionary considerations do help to explain consciousness and its functions.

In this view, various suggestive proposals about the possible biological and evolutionary foundations of consciousness have been put forward. For example, according to Damasio (2010), the conscious mind emerges within the history of life regulation (homeostasis) which begins in unicellular living creatures, progresses in individuals whose behavior is managed by simple brains, and it continues its march in individuals whose brains generates both behavior and mind. From there on, an organized self process could be added to the mind, thereby providing the beginning of elaborate conscious minds (Damasio 2010, pp. 25–26).

The core principle of life regulation can be traced back to single cells, which "possess a decisive, unshakable determination to stay alive for as long as the genes inside their microscopic nucleus commanded them to do so." (Damasio 2010, p. 35). This brainless, mindless will to stay alive was transferred from single cells to the conscious mind by means of the working of nervous cells or neurons, which functionally differ from the other kinds of cells in that the former produce electrochemical signals capable of changing the state of the latter. At the same time, the working of neurons transformed the "collective voice" of "the aggregate of the inchoative wills of all the cells of the body" into the "single voice" of a unique, single entity. Among other things, this transformation allowed for the move from simple life regulation, focused on the survival of the organism, to progressively more deliberated regulation, which offered the system the possibility to maintain and expand well-being (as opposed to merely seek survival) in virtually any conceivable environment.

Cognitive Processing

Two conceptions of consciousness and why only the neo-Aristotelian one enables us to construct evolutionary explanations

Harry Smit[1]✉ & Peter Hacker[2]

Descartes separated the physical from the mental realm and presupposed a causal relation between conscious experience and neural processes. He denominated conscious experiences 'thoughts' and held them to be indubitable. However, the question of how we can bridge the gap between subjective experience and neural activity remained unanswered, and attempts to integrate the Cartesian conception with evolutionary theory has not resulted in explanations and testable hypotheses. It is argued that the alternative neo-Aristotelian conception of the mind as the capacities of intellect and will resolves these problems. We discuss how the neo-Aristotelian conception, extended with the notion that organisms are open thermodynamic systems that have acquired heredity, can be integrated with evolutionary theory, and elaborate how we can explain four different forms of consciousness in evolutionary terms.

(1) *Intransitive consciousness*, we have seen, is characteristic of sentient creatures, i.e. animals that have the powers of sensation and perception and are susceptible to pleasure and pain. Animals have a diurnal cycle of sleeping and waking and, hence, enjoy intransitive consciousness. We can use here evolutionary explanations of diurnal cycles clarifying why intransitive consciousness evolved. Notice that we distinguish being awake and asleep from being conscious and unconscious. This is related to the contexts in which we observe the responses related to the use of these verbs. 'Being unconscious' and 'recovering consciousness' are typically used in the hospital, while asking whether someone is asleep or has woken up belongs at home. Why do we differentiate between these cases? This is related to responsiveness: behavioural observations show that we are far more responsive during sleep than during periods of unconsciousness (it is not difficult to come up here with an evolutionary and biomedical explanation for this difference). Of course, there are interesting borderline cases between intransitive unconsciousness and consciousness: in rare cases humans are barely conscious, sleep–walking, groggy, or, in technical terms, in hypnotic trance, in a fugue state, et cetera. In line with what has been elaborated above it is important to notice that (un) consciousness is a state of a creature, but not a mental state. Consciousness, we have seen, is a condition for being in any occurrent mental state. Thus a state of intense concentration is a state of consciousness we are *in* (for example when we are doing an exam) while we are conscious. This occurrent mental state is opposed to a dispositional mental state, e.g. being in a depression.

(2) *Transitive perceptual consciousness* concerns (among other things) the passive power to have one's attention caught by things and events in the periphery of one's perceptual field. It signifies a form of coming to know or of knowing something. Other verbs we use to signify this are being aware, noticing, realizing and recognizing. These are all factive verbs of cognitive receptivity. The point to notice is that the verbs used for cognitive receptivity are not *achievement* or success verbs but *result* verbs. In contrast to verbs such as 'detect', 'discern', 'discover' or 'find out', they do not signify achievement of knowledge (Hacker, 2012, 2013; White, 1964). They indicate the reception of knowledge: we become conscious or aware of something, notice, recognize or realize something, but this is not a matter of achieving knowledge as the result of our endeavour, for these are not acts or activities that we may perform voluntarily, intentionally, deliberately or on purpose. We cannot ask 'How are you conscious of…?'. We ask 'How do you know …?' but 'What made you conscious of …?'. For while there are sources of knowledge (perception, evidence, reason, etc.), there are no sources (as opposed to causes) of being conscious of something. This also clarifies why we cannot be ordered or forbidden to become or be conscious of something. It also clarifies that consciousness of something is neither an exercise nor a skill (when we are conscious of something, we are not an expert or authority in a given domain of knowledge). We cannot become skilful at becoming conscious of things, although we can be trained in greater receptivity and to be more sensitive to certain things. Since the other animals are sentient beings too, they also have this passive power. How did it evolve?

Take the example of a gazelle grazing on the savannah. When it is searching its surroundings for predators, the gazelle can attend to the colour and contours of a predator. When we explain to another person what we see when a gazelle is paying attention to a predator, we describe what the gazelle is doing: it is for example frequently looking in the direction of the predator (observing, watching, scrutinizing). The point to notice is that although looking with and without attention may not differ, what the gazelle subsequently does if it looked with attention may differ greatly (for example when the predator moves one step in its direction it may immediately start fleeing). Hence if the predator *captures* its attention, the gazelle is conscious of what holds its attention. We may notice this as observers since attention may have a manner: the attention paid to the predator may be intense or careful.

Now imagine a gazelle grazing on the savannah and assume that the animal has not yet noticed a predator. Since attending to something may be intermittent, the gazelle will first pay attention to what it is eating but will, after a while, forage mainly inattentively or mechanically. Suppose that the gazelle, engaged in (goal-directed) foraging behaviour, notices a moving creature in the periphery of its perceptual field. It will then become conscious of the presence of the creature (it realizes that it is a predator). Perceptual consciousness is then a matter of peripheral attention: the gazelle becomes conscious of impending danger resulting in the activation of the fight-flight system. The advantages are clear: an animal that lacked such a power would have a selective disadvantage since it would have higher risks of being caught by a predator. It is easy to see that we can extend this story by discussing adaptations on the side of the predator, clarifying why the 'seek and hide'-arms race between predator and prey has resulted in improved cognitive receptivity of the prey (and better fleeing skills) and improved hunting skills of the predator.[4]

(3) What are the evolutionary advantages of *transitive somatic consciousness*? Recall it is the foot that hurts, not the mind or the brain. As Aristotle taught us, we have a sensitive body: our head may ache, our back may tickle, our leg may itch and our fingers may hurt. The human body, we have seen, is not an insensate machine, but a living organism. Since there is no difference between having a pain and being consciousness of a pain, the evolutionary advantage is patent. For example when I have a splinter in my finger because I have used a wooden tool, the pain I experience in my finger (not in my brain), induces me to remove the splinter before it may cause severe damage to my body (e.g. an inflammation). And when someone expresses his or her pain in behaviour, inclusive fitness theory teaches us that this form of communicative behaviour may elicit helping behaviour and enhance the inclusive fitness of the helping individual.

(4) *Reflective consciousness* (also called self-consciousness) presupposes mastery of a language. For only a language-using creature which possesses the concepts of anger, depression, excitement or love, can realize or become conscious of the fact that he or she is angry, depressed, excited or in love. Humans can engage in forms of self-reflection when trying to determine, for example, the nature of their feelings (e.g. whether they really love someone). It is 'calling up some memories, of imagined possible situations and of the feelings that one would have if …' (Wittgenstein, 2009, par. 587). Such soul-searching inquiries require imagination and judgement, but no 'inner eye', for there is no inner eye and nothing to perceive. But we can reflect on images and on what someone has done and said, et cetera, for we do have ideas in mind, thoughts do flash across our minds, and we often engage in reflective introspection. If it makes sense to speak of the evolutionary advantage of this form of transitive consciousness, then it is an aspect of the evolutionary advantage of possessing a language (see Smit, 2014, 2016), although one should keep in mind here that not every form of reflective consciousness must have an evolutionary advantage, just as we do not need to suppose that every kind of pain is of evolutionary advantage.

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Two conceptions of consciousness and why only the neo-Aristotelian one enables us to construct evolutionary explanations

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INTRODUCTION

The Hard Problem of Consciousness

As one of the most complex structures we know of nature, the brain poses a great challenge to us in understanding how higher functions like perception, cognition, and the self arise from it. One of its most baffling abilities is its capacity for conscious experience (van Gulick, 2014). Thomas Nagel (1974) suggests a now widely accepted definition of consciousness: a being is conscious just if there is "something that it is like" to be that creature, i.e., some subjective way the world seems or appears from the creature's point of view. For example, if bats are conscious, that means there is something it is like for a bat to experience its world through its echolocational senses. On the other hand, under deep sleep (with no dreams) humans are unconscious because there is nothing it is like for humans to experience their world in that state.

In the last several decades, consciousness has transformed from an elusive metaphysical problem into an empirical research topic. Nevertheless, it remains a puzzling and thorny issue for science. At the heart of the problem lies the question of the brute phenomena that we experience from a first-person perspective—e.g., what it is like to feel redness, happiness, or a thought. These qualitative states, or qualia, compose much of the phenomenal side of consciousness. These qualia are arranged into spatial and temporal patterns and formal structures in phenomenal experience, called eidetic or transcendental structures[1]. For example, while qualia pick out how a specific note sounds, eidetic structures refer to the temporal form of the whole melody. Hence, our inventory of the elusive properties of phenomenal consciousness includes both qualia and eidetic structures.

One of the central aspects of phenomenal features is privacy. It seems that my first-person feeling of happiness, for example, cannot be measured from any other third-person perspective. One can take indirect measurements of my heart rate or even measure the activity in the brain networks that create the representation of happiness in my mind, but these are just markers of the feeling that I have, and not the feeling itself (Block, 1995). From my first-person perspective, I don't feel the representation of happiness. I just feel happiness. Philosophers refer to this feature of phenomenal consciousness as "transparency": we seem to directly perceive things, rather than mental representations, even though mental representations mediate experience. But this feeling cannot be directly measured from the third-person perspective, and so is excluded from scientific inquiry. Yet, let us say that we identify a certain mental representation in a subject's brain as "happiness." What justifies us in calling it "happiness" as opposed to "sadness?" Perhaps it is correlated with certain physiological and behavioral measures. But, ultimately, the buck stops somewhere: at a subject's phenomenological report otherwise, we cannot know what this representation represents (Gallagher and Zahavi, 2020). If we categorize the representation as "happiness" but the subject insists they are sad, we are probably mistaken, not the subject. Phenomenal properties are seemingly private and, by some accounts, even beyond any physical explanation. For being physical means being public and measurable and is epistemically inconsistent with privacy. Take an electron, for example. We know it is physical because we can measure it with e.g., a cathode ray tube. If electrons were something that only I could perceive (i.e., if they were private), then we would not include them as physical parts of the scientific worldview. Affective scientists, for example, measure aspects of feeling all the time, like valence and arousal, but measuring these is not the same as measuring the feeling of happiness itself. What affective scientists measure are outcomes of the feeling, while the feeling itself is private and not measurable by the scientists. To date, it is not clear how to bridge the "explanatory gap" (Levine, 1983) between "private" phenomenal features and public, measurable features (e.g., neurocomputational structures), leaving us stuck in the "hard problem" of consciousness (Chalmers, 1996). This gap casts a shadow on the possibility for neuroscience to solve the hard problem because all explanations will always remain within a third-person perspective (e.g., neuronal firing patterns and representations), leaving the first-person perspective out of the reach of neuroscience. This situation divides consciousness into two separate aspects, the functional aspect and the phenomenal one (Block, 1995). The functional aspect ('functional consciousness'), is the objectively observable aspect of consciousness (Franklin et al., 2016; Kanai et al., 2019). [In that sense, it's similar to Ned Block's definition of access conscious, but with less constraints. All phenomenal consciousness has a functional aspect and vice versa, whereas for Block this strict equivalence doesn't hold (Block, 2011).] But the subjective aspect (phenomenal consciousness) is not directly observable except on the part of the person experiencing that conscious state. As we saw above, because they are private, phenomenal properties are distinct from any cognitive and functional property (which can be publicly observable). Any theory of consciousness should explain how to bridge this gap—How can functional, public, aspects give rise to phenomenal, private aspects?

Nevertheless, in recent decades, consciousness has become increasingly amenable to empirical investigation by focusing on its functional aspect, finally enabling us to begin to understand this enigmatic phenomenon. For example, we now have good evidence that consciousness doesn't occur in a single brain area. Rather, it seems to be a global phenomenon in widespread areas of the brain (Baars, 1988; Varela et al., 2001; Mashour et al., 2020).

In studying *functional consciousness*, we take consciousness to be a form of information processing and manipulation of representations, and we trace its functional or causal role within the cognitive system. Widely successful theories, such as global workspace theory (Baars, 1988; Dehaene, 2014; Franklin et al., 2016), attention schema theory (Graziano, 2019), recurrent processing theory (Lamme, 2006; Fahrenfort et al., 2007), and integrated information theory (Tononi, 2008; Oizumi et al., 2014) are virtually premised on this information processing account. Despite our advances in the study of functional consciousness, we still lack a convincing way to bridge the explanatory gap to phenomenal consciousness. The questions, "Why does it feel

[1]The terms are nearly synonymous, but 'transcendental' means additionally that one has performed the *epochę*. The *epochę* refers to a theoretical bracketing of the ontological status of phenomena—i.e., bracketing the existence of the world. The goal of the *epochę* is to not confuse external reality with the immanent features of phenomenal consciousness. Since this is not a concern of ours here, we stick with the term 'eidetic.' See Husserl (1925/2012).

like anything at all to process information?", and "How can this feeling be private?" still remain controversial. The hard problem primarily remains a philosophical rather than scientific question. Phenomenal consciousness must be the ultimate reference point for any scientific theory of consciousness. Ultimately, theories of consciousness as information processing, i.e., theories of functional consciousness, only approximate full-blown consciousness by abstracting away its phenomenal features. But they must ultimately refer to phenomenal features in order to give a full explanation of consciousness. Otherwise, there are no grounds for labeling them theories of consciousness, rather than theories of cognition or global informational access.

Let's take Integrated Information Theory (IIT), for example. IIT claims to bridge between the phenomenal and functional aspects of consciousness and to answer the question of what qualia are (Tononi et al., 2016). According to IIT, consciousness is the result of highly integrated information in the brain [which is "the amount of information generated by a complex of elements, above and beyond the information generated by its parts" (Tononi, 2008)]. A mathematical formula can determine how much integrated information, and thus how much consciousness, is present in any specific system. This measure is referred to as ϕ, and if ϕ is higher than zero, the system is conscious. In this situation, the system has a "maximally irreducible conceptual structure" which is identical to its phenomenal experience (Oizumi et al., 2014). These maximally irreducible conceptual structures are composed of integrated information states, and thus a quale is identical to a specific relation between integrated information states. The problem is that these maximally irreducible conceptual structures are physical states and even though they can be very complex, they are still public and observable from a third-person perspective, while qualia are private and only perceptible from the first-person perspective. How can there be an identity between opposite properties like public and privacy properties? Yet, this is what IIT suggests without any explanation about how to bridge this contradiction. Let's choose a conceptual structure such that it is a quale of happiness according to IIT. However, it cannot truly be the quale of happiness because, in principle, when we measure it, we observe a physical process and not the qualitative happiness itself (that's why it's not enough to measure the physical process, and eventually we need to ask the participants what they feel). Again, we remain stuck within the explanatory gap and the hard problem. In other words, IIT hasn't solved the hard problem and hasn't bridged the explanatory gap between private and public properties (Mindt, 2017). In order to avoid this problem, IIT needs to assume phenomenal consciousness as a primitive element separated from other physical elements like space and time. In that case, there is no gap to bridge because now these maximally irreducible conceptual structures are not qualia anymore. They are just physical structures that have properties that correspond to the properties of phenomenal consciousness, but that are not identical to them. In that sense, IIT just shows correspondence between two separate kinds of elements, phenomenal and physical. In the next paragraph we will see that this kind of solution is exactly what Chalmers refers to as 'naturalistic dualism.' The problem with that is that instead of understanding what phenomenal consciousness is and what the relations are between the physical world and the phenomenal world, it just assumes that phenomenal consciousness exists as a separate basic element in the world, and it does not solve how there can be any interaction between physical and phenomenal elements (Carroll, 2021).

This is not an issue of only IIT, but a problem to all physicalist's theories. As David Chalmers (1995) has put it, "the structure and dynamics of physical processes yield only more structure and dynamics, so structures and functions are all we can expect these processes to explain." The structure and dynamics of information tell us nothing of the story of how one gets from these public structures and dynamics to our private phenomenal experience (and how there can be an equality between these opposite properties). This is known as the 'structure and dynamics argument' (Alter, 2016; Chalmers, 2003; Mindt, 2017), stating that structure and dynamics alone are not enough to account for consciousness. This raises a concern about whether any physicalist theory can solve the hard problem of consciousness. In the next sections, however, we will show that physicalism is broader than describing only structures and dynamics, and that we can use this fact in order to solve the hard problem.

Views about the relation between phenomenal and functional consciousness exist across a spectrum. On one end, illusionists seek to erase the hard problem by referring only to functional consciousness, taking phenomenal properties to be cognitive illusions. On the other end, naturalistic dualists or panpsychists seek to promote phenomenal consciousness as a fundamental, non-material, and undecomposable constituent of nature (Chalmers, 2017). The controversy over phenomenal consciousness can be traced to one central problem: naturalization. The project of naturalization involves taking folk psychological concepts and subjecting them to physical laws and empirical scrutiny (Hutto, 2007). Illusionists take the current scientific approach to consciousness and argue that this eliminates the messy problem with supposedly private, immaterial qualia. According to them, functional consciousness generates an illusion of special phenomenal properties, which create the persistent "user illusion" (Dennett, 1991) of a first-person perspective. Dualists start from the same problem of naturalization, but take it that phenomenal consciousness is simply not amenable to third-person scientific inquiry due to its sui generis properties. What is needed, according to the naturalistic dualist, is an expanded understanding of what counts as "natural." "Given that reductive explanation fails, *nonreductive* explanation is the natural choice" (Chalmers, 2017, p. 359). Chalmers proposes that consciousness is a fundamental property, something like the strong nuclear force that is irreducible to other forces. A complete ontology of the natural world simply must include phenomenal consciousness as a basic, undecomposable constituent.

A Relativistic Theory of Consciousness

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9._ Gallery of AI-assisted projects. III

“Proposal for Gynoid Twins #3”. Supra-Gender, ——series for this issue.
Photo by: Rodrigo Granda (artificial intelligence generated image)

“Proposal for Gynoid Twins #4”. Supra-Gender, ——series for this issue.
Photo by: Rodrigo Granda (artificial intelligence generated image)

“Manufacture of Gynoid #2”. Supra-Gender, ——series for this issue.
Photo by: Rodrigo Granda (artificial intelligence generated image)

ChatGPT

“Manufacturing of Transgender Gynoid #2”. Supra-Gender, ———series for this issue.
Photo by: Rodrigo Granda (artificial intelligence generated image)

“Manufacturing of Transgender Gynoid #3”. Supra-Gender, ——series for this issue.
Photo by: Rodrigo Granda (artificial intelligence generated image)

“Manufacturing of Transgender Gynoid #4”. Supra-Gender, ——series for this issue.
Photo by: Rodrigo Granda (artificial intelligence generated image)

“Manufacturing of Transgender Gynoid #5”. Supra-Gender, ——series for this issue.
Photo by: Rodrigo Granda (artificial intelligence generated image)

ChatGPT

“Manufacturing of Transgender Gynoid #6”. Supra-Gender, ———series for this issue.
Photo by: Rodrigo Granda (artificial intelligence generated image)

“Manufacturing of Transgender Gynoid #7”. Supra-Gender, ——series for this issue.
Photo by: Rodrigo Granda (artificial intelligence generated image)

10._ Ethics and Personhood: Consciousness and Intelligence

Who or what is a person?

To be classified as a "person" normally entails having strong moral rights and legal protections, and higher moral status than living things that cannot credibly be classified as persons. But as Karen Gervais (1986) effectively argued, the more basic question here is a metaphysical or ontological one about the necessary and sufficient conditions for knowing when a particular kind of being exists or does not exist.

A. Five typical traits

According to philosopher Mary Anne Warren (1973), "the traits which are most central to the concept of personhood . . . are, very roughly, the following: 1. consciousness . . . and in particular the capacity to feel pain; 2. reasoning (the developed capacity to solve new and relatively complex problems); 3. self-motivated activity (activity which is relatively independent of either genetic or direct external control); 4. the capacity to communicate, by whatever means, messages of an indefinite variety of types . . . ; 5. the presence of self-concepts, and self-awareness. . . ."

Warren thinks that these traits comprise what we mean by a person in the full-blown sense, but that a being need not have all of these attributes in order properly to be considered a person in some sense. I think that most of us would agree with that. We might lose the ability to communicate and yet still remain the same essential person. And if self-motivated activity were truly a necessary condition for personhood, we'd all be in trouble some of the time!

But Warren seems to believe that reasoning is both a necessary and sufficient condition for personhood. This raises the intriguing possibility that some non-human animals like chimps and dolphins might qualify as persons, but also the disturbing implication that some human beings would not qualify, such as the severely retarded or demented. In other words, if we set the bar as high as Warren has, we logically exclude many vulnerable human populations from the category of persons, and thus from the rights we ascribe to persons, which is very troubling. (See Dombrowski 1997. For a fascinating study of non-human mental capacities, consult DeGrazia 1996.)

We thus need to consider whether another human capacity besides rationality could qualify as a necessary or sufficient condition for personhood. (I'll ignore non-human animals in what follows.) One useful way to get at this is to reflect on our concepts of death:

B. Determining the death of persons

How can we know that a person has died, or when are we justified in declaring a person to be dead? Consider these contending criteria:

1. Decomposition When every last cell with a person's DNA has died (ignoring cells in donated blood and other organs): This is clearly a sufficient condition for the death of a person. It would seem utterly ridiculous as a necessary condition. But consider the Vatican's claim that a person is fully present from conception, when there is only an undifferentiated embryo with a full complement of human DNA. Under that assumption, it's hard to see how anything short of complete cellular decomposition would be sufficient to declare a person to be dead, since the cessation of heart, lung or brain function could not logically be sufficient conditions (Dombrowski & Deltete 2000). Moreover, in separating the mind from the organic development of the brain, the person-from-conception view seems to reflect a belief in an immaterial mind, which suffers from the fatal metaphysical flaws I mentioned earlier. These points effectively refute the claim that persons exist from conception.

2. Cessation of cardiopulmonary functions This used to be considered a sufficient condition throughout the world, and in a sense it remains so legally in the U.S. in cases when brain death is not possible to assess. It remains a necessary condition in some religions and cultures where the soul is identified with breath or the blood. Of course, the fact that we can resuscitate people with CPR after their breathing and heartbeat have stopped--and often revive them to a conscious state with their full personalities intact--proves that this criterion is not really a sufficient condition for the death of a person, and need not be considered a necessary condition. People who still believe that it is sufficient cannot also expect to be resuscitated or maintained on ventilators without contradicting themselves.

3. Whole-brain death i.e., the loss of function of the entire brain: The first clinical case of a brain-dead individual whose heart and lungs were maintained on a respirator was reported by French doctors in 1959. In 1968, an ad hoc committee at Harvard Medical School chaired by Henry Beecher recommended that doctors declare death based on the permanent loss of all brain functions (Bernat 1994; Pernick 1999). Whole-brain death is now a sufficient condition for declaring a person to be legally dead in every U.S. state. This standard conveniently incorporates two common-sense aspects of the death of a person, "the irreversible loss of the capacity for consciousness and the irreversible cessation of integrated functioning of the organism as a whole" (McMahan 1998).

4. Higher-brain/neocortical death Many philosophers have questioned, though, whether whole-brain death is a necessary condition for the death of a person (Veatch 1975, 1993; Gervais 1986; Cranford & Smith 1987; McMahan 1995). If what really matters is the permanent loss of consciousness, then in theory we could declare persons dead even if they were not whole-brain dead. This view is consistent with the idea—which I find compelling—that a person's life is coextensive with his or her capacity for experience and thought. By this definition, human beings in permanent comas and persistent vegetative states would be dead persons.

Depending on etiology, clinical diagnosis of permanent unconsciousness prior to whole-brain death can be fairly certain after three months to one year, and quite certain with positron emission tomography tests (Levy et al. 1987; Cranford & Smith 1987). To avoid the risk of abuse, e.g., when death by higher-brain standard might be declared prematurely in order to eliminate the financial burden on others of continued treatment, lawmakers could easily stipulate very conservative criteria, such as PET scans showing that the entire cerebral cortex no longer functions.

What would it mean to adopt the higher-brain standard as a sufficient condition for declaring persons to be dead?

LANGUAGES AS AN ADVANCED PATTERN ENCODING AND TRANSFER MECHANISM

Language is the quintessential example of the evolved SPP capabilities of the human brain as it involves (once learned) the instantaneous conversion of sounds to visual symbols, and vice-versa. Language is a complex behavior in which auditory and/or visual patterns learned from other individuals or perceived in the environment are encoded, processed and modified for the purpose of transfer of information to other individuals. Language involves the use of patterns (symbols, words, and sounds) to code for objects and events encountered either via direct experience or communication from other individuals. Language-related SPP can create new patterns (stories, paintings, songs, etc.) of "things" that may (reality) or may not (fiction) exist. Language-mediated encoding and transfer of auditory and visual patterns enabled the rapid evolution of the human brain and is likely a major reason for the current dominance of *Homo sapiens*. (Aboitiz et al., 2006; Berwick et al., 2013). Individuals with the ability to communicate to their family/tribe members the precise locations of food sources, hazards and other salient features of their environment would have had a clear survival advantage. In modern times, rapid advances in science, technology and medicine are facilitated by language-based information transfer. However, despite it being a remarkable leap forward in evolution, language may not involve any fundamentally new cellular or molecular mechanisms; instead, language is mediated by recently evolved neural circuits integrated with older circuits, all of which utilize generic pattern processing mechanisms. In this section I briefly summarize what is known of the evolutionary history of language, and then consider the underlying neural circuits and their highly efficient ability to detect, encode, manipulate, and then transfer patterns.

While birds and non-human primates exhibit auditory communication, their vocalizations convey general information such as danger, rather than detailed instructions. It has been proposed by Tomasello (2008) that the kinds of gestures used by great apes is an evolutionary precursor of language. Studies of infant humans further support the notion that pointing and gestures are an ontogenic precursor to language (Goldin-Meadow, 2007; Liszkowski et al., 2009). Languages involving complex vocabularies and written symbols and words are believed to have arisen in *Homo sapiens* beginning approximately 100,000 years ago (Berwick et al., 2013). The rapid evolution of language skills, and the underlying neural circuits that mediate language processes, is fully consistent with its fundamental role in the rapid advancement of human societies. Language provides powerful reproductive and survival advantages. A man who engages a woman in stimulating conversation is more likely to attract her as a mate than is an inarticulate man. An army whose soldiers use detailed maps and advanced communication skills is more likely to win a battle than is an army that charges forward "blindly."

Language involves sensory and motor pathways, and associated cerebral cortical regions that encode and integrate the learned patterns of sounds and symbols/letters (Kuhl, 2010). Brain regions that are critically involved in language SPP in humans include ventrolateral prefrontal cortex and parietal cortex (Broca's area), and the posterior region of the superior temporal gyrus and adjacent parietal lobe (Wernicke's area) situated between the auditory and visual cortices. Broca's area is closely associated with motor cortex and, accordingly, is critical for the production of speech. Wernicke's area is critical for the comprehension of language and accurate communication via speech or writing. A comparison of human and macaque brains suggests there are two major "language pathways," one that connects anterior auditory regions with ventrolateral prefrontal areas and one that connects auditory areas with ventrolateral prefrontal and parietal areas (Aboitiz, 2012). The second pathway is more highly developed for phonological and complex syntax processing, whereas in macaques it is involved more in hand and body gestures and involuntary vocalizations. Therefore, the elaborate vocal communication PP capability of humans has an evolutionary overlap with brain structures and circuits used for gesturing in non-human primates (Aboitiz, 2012). The neuronal circuits and mechanisms that evolved to enable communication using gestures are not well understood, but may involve a mirror system that matches observed events with similar intrinsically produced movements to enable communication of specific requests or intentions to another attentive individual (Rizzolatti and Arbib, 1998).

As they exist today, modern languages are the result of contributions of many generations of people living in the same territory/country. Once the basic set of symbols (letters) were established, specific patterns of the letters (words) were assigned to specific objects or phenomena, and the words were arranged in sequences to describe the temporal and/or physical relationships between the objects and phenomena. The number of words in the English language in common use (in a dictionary) is well over 200,000, but when one considers the number of discipline-specific words (in science, technology, engineering, etc.) the number of words is perhaps at least an order of magnitude greater. Moreover, for all intents and purposes there are an infinite number of sentences and stories that can be fabricated using even a small fraction of the total number of words. Remarkably, the learning of languages and the potentially infinite number of stories (word sequences) that an individual can construct are accomplished using a finite number of neurons that is established during early brain development. Our current understanding of the mechanisms of language learning, memory and communication is that they involve chemical and structural changes in synapses in neuronal circuits involved in encoding (hippocampus) and consolidation (multiple cortical regions) of words and the entities they represent (Shtyrov, 2012). Presumably, the synapses involved in language are "strengthened" by repetition (listening and talking, and reading and writing).

Mattson MP. Superior pattern processing is the essence of the evolved human brain. Front Neurosci. 2014 Aug 22;8:265. doi: 10.3389/fnins.2014.00265. PMID: 25202234; PMCID: PMC4141622.

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Fundamental Differences Between Biological and Artificial Intelligence

We often think and deliberate about intelligence with an anthropocentric conception of our own intelligence in mind as an obvious and unambiguous reference. We tend to use this conception as a basis for reasoning about other, less familiar phenomena of intelligence, such as other forms of biological and artificial intelligence (Coley and Tanner, 2012). This may lead to fascinating questions and ideas. An example is the discussion about how and when the point of "intelligence at human level" will be achieved. For instance, Ackermann. (2018) writes: "Before reaching superintelligence, general AI means that a machine will have the same cognitive capabilities as a human being". So, researchers deliberate extensively about the point in time when we will reach general AI, (e.g., Goertzel, 2007; Müller and Bostrom, 2016). We suppose that these kinds of questions are not quite on target. There are (in principle) many different possible types of (general) intelligence conceivable of which human-like intelligence is just one of those. This means, for example that the development of AI is determined by the constraint of physics and technology, and not by those of biological evolution. So, just as the intelligence of a hypothetical extraterrestrial visitor of our planet earth is likely to have a different (in-)organic structure with different characteristics, strengths, and weaknesses, than the human residents this will also apply to artificial forms of (general) intelligence. Below we briefly summarize a few fundamental differences between human and artificial intelligence (Bostrom, 2014):

-Basic structure: Biological (carbon) intelligence is based on neural "wetware" which is fundamentally different from artificial (silicon-based) intelligence. As opposed to biological wetware, in silicon, or digital, systems "hardware" and "software" are independent of each other (Kosslyn and Koenig, 1992). When a biological system has learned a new skill, this will be bounded to the system itself. In contrast, if an AI system has learned a certain skill then the constituting algorithms can be directly copied to all other similar digital systems.
-Speed: Signals from AI systems propagate with almost the speed of light. In humans, the conduction velocity of nerves proceeds with a speed of at most 120 m/s, which is extremely slow in the time scale of computers (Siegel and Sapru, 2005).
-Connectivity and communication: People cannot directly communicate with each other. They communicate via language and gestures with limited bandwidth. This is slower and more difficult than the communication of AI systems that can be connected directly to each other. Thanks to this direct connection, they can also collaborate on the basis of integrated algorithms.
-Updatability and scalability: AI systems have almost no constraints with regard to keep them up to date or to upscale and/or re-configure them, so that they have the right algorithms and the data processing and storage capacities necessary for the tasks they have to carry out. This capacity for rapid, structural expansion and immediate improvement hardly applies to people.
-In contrast, biology does a lot with a little: organic brains are millions of times more efficient in energy consumption than computers. The human brain consumes less energy than a lightbulb, whereas a supercomputer with comparable computational performance uses enough electricity to power quite a village (Fischetti, 2011).

These kinds of differences in basic structure, speed, connectivity, updatability, scalability, and energy consumption will necessarily also lead to different qualities and limitations between human and artificial intelligence. Our response speed to simple stimuli is, for example, many thousands of times slower than that of artificial systems. Computer systems can very easily be connected directly to each other and as such can be part of one integrated system. This means that AI systems do not have to be seen as individual entities that can easily work alongside each other or have mutual misunderstandings. And if two AI systems are engaged in a task then they run a minimal risk to make a mistake because of miscommunications (think of autonomous vehicles approaching a crossroad). After all, they are intrinsically connected parts of the same system and the same algorithm (Gerla et al., 2014).

Korteling JEH, van de Boer-Visschedijk GC, Blankendaal RAM, Boonekamp RC, Eikelboom AR. Human- versus Artificial Intelligence. Front Artif Intell. 2021 Mar 25;4:622364. doi: 10.3389/frai.2021.622364. PMID: 33981990; PMCID: PMC8108480.

frontiers in Artificial Intelligence

AI and Human Consciousness

In the coming years, machines will get smarter. If we cannot distinguish a machine from a human, then we have reason to think that this machine is intelligent [6]. Therefore, the question we are going to face is as follows: can an intelligent machine be considered as having consciousness? This requires us to understand the relationship between AI and human consciousness.

1. AI Promotes the Development of Human Intelligence

As a necessary supplement to human intelligence, AI effectively extends the human brain and enlarges its intelligence. AI and the human brain are correlated and have been supporting each other forward. All these make human cognition scope continuously expand to the micro- and macropoles, enabling people to have a deeper understanding of the essence of things indirectly, and greatly enriching the content of consciousness.

AI, which simulates human operational intelligence, is far superior to human beings in computing speed, capacity, and accuracy. It indeed can liberate mental labor. With the support of the Internet and big data technology, AI will help humans in more fields and more profoundly, even conducting rescue operations in extreme environments. In the field of medical practice, brain stimulation is helpful to restore the damaged brain nerve. In terms of transportation, with the application of data, connection, real-time sensing, and traffic prediction, humans will experience shared riding and automatic driving for the first time. The revolution of the third-generation culture carrier represented by AI will promote the great change of human memory and learning style. AI is our brain assist device, which stores a lot of information in an intact manner. The undertaker of memory and thinking is gradually separating from the human body and tends to become objectified. Portable computers have replicated what we call as cognition, and even our human rationality also faces challenges. However, human beings can use their dynamic intuition and give play to their innovation abilities [5]. The printing carrier once ushered in a period of flourishing human culture. Now, we should keep an open mind on the promotion role of AI in human consciousness. AI technology has put forward new requirements for human data observing and processing ability. The workers who receive information technology (IT) vocational training will better adapt to the changes, so we can be one step forward in the transformation to an intelligence-intensive society. With the help of intelligent machines, humans could become new-type, creative, and reliable cognitive subjects.

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Research Article

Research on How Human Intelligence, Consciousness, and Cognitive Computing Affect the Development of Artificial Intelligence

2. Human Consciousness Restricts the Development of AI

The nature of consciousness affects the development of AI. Consciousness can be introspective, which reveals what cannot be reached by the objective research on consciousness. Human consciousness is not a passive or negative reflection of reality; instead, it is a positive and active one. When determining the behavior of the subject, the external experience must be reflected through the inner world as well as the thinking and feeling system of the subject. The so-called animal consciousness is a statement untested, because animals cannot distinguish themselves from their activities. They are integral. The same is true of artificial consciousness. Although AI can complete part of human thinking activities, it does not understand the meaning of doing this. It operates mechanically and aimlessly. Even if AI has a purpose, it is all instilled by humans to achieve goals of themselves. After 70 years, the movement of logical functionalism ended in a dismal way, while the structuralism of consciousness points out a new direction for AI. Structuralism has a successively experienced semantic network and neural network. The latter one argues that connections among things in the world are all the same, while the differences lie in their frequencies of occurrence. The neural network cannot distinguish the "White" as a name and the "White" as a color. This kind of AI, in essence, is a program or function that makes similar reflex responses to specific stimuli. AlphaGo is weak AI, and programming is not an effective way to achieve a machine's consciousness.

The change and development of consciousness bring about corresponding changes in AI. Under the consciousness theory system of a subject-object dichotomy, abstract operational rules promote the R&D of algorithms. This theory argues that human consciousness can be simply summarized as the brain's symbolic operation, while the characteristics of consciousness in intuition, common sense, and external environment are ignored. In fact, the change in AI development level is indeed related to the development of human consciousness. Behaviorism and structuralism, which are similar to the human brain neural network, are simulations of human adaptive mechanisms and not restricted by forms. Subject-object integration, a philosophical trend focusing on the interaction with the real world, provides ideological inspiration for AI. Human consciousness theory criticizes principles of form. Deep learning represented by AlphaGo has gotten rid of structural restrictions and acquired problem-solving strategies through learning human's experiences. In 2016, by adopting Monte-Carlo Tree Search (MCTS) and deep learning (DL) to think from the whole picture and make the optimal choice, AlphaGo, a program developed by DeepMind, won the Go game, getting rid of the restrictions of brute force method [7]. When embodiment philosophy arose, AI began to imitate the human body's movement and gestures, such as simulating the rules of facial movement. To some extent, the fact that AI began to shift its focus to the human body and external environment is inseparable from the exposition of consciousness by phenomenologists [8]. We can tell that although the philosophical theory of consciousness cannot directly improve the technical essence of AI, its development and change will provide foresight for the exploration of AI.

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What Does It Mean to Be Human?

> Farm animals were a sort of inferior class, reassuring the humblest rural worker that he was not at the absolute bottom of the social scale, a consolation which his industrial successor was to lack (Thomas 1983:50).

As the "humblest rural worker" in days of yore needed consolation and reassurance, so may be the case of the workers of today. Kurzweil (2015) refers to people that are alarmed by the rise of intelligent machines and "have expressed the wish to remain 'unenhanced' while at the same time keeping their place at the top of the intellectual food chain" (Kurzweil 2015, p. 167). A member of the English House of Lords' Artificial Intelligence Committee, Steven Croft, pointed to the fact that more "mundane tasks" will be lost to automation, and that this might lead to an identity crisis (Campbell 2017). That personal identity is connected to jobs, and the feeling of value connected to not being "at the absolute bottom of the social scale", is not the end of this story. We may imagine even bigger challenges to our identity coming, as we are challenged by machines that rival us in some of the areas that we most value. An obvious example: should the process Chalmers (2015) described occur, where we *integrate* ourselves with machines and become uploaded selves in a digital universe, it is not very far-fetched to assume that we will experience uncertainty about the meaning of *being human*. The possibility of very smart machines, he says, "forces us to think hard about values and morality and about consciousness and personal identity", and "brings up some of the hardest traditional questions in philosophy and raises some new philosophical questions as well" (Chalmers 2015).

Human-computer interaction (HCI) is a field where the relationship between human and computes are studied. Norman (1991) is a proponent of the cognitive approach in the field, and he explains that there are two different view of artefacts—devices that "maintain, display or operate upon information" in order to, for example, assist us in cognitive tasks. The *system view* involves us seeing the actor, the task and the artifice as a whole, whereas the actor's capacity is *increased*. From the *personal view*, however, which is the view of the actor, his capacity is not enhanced by the artefact, but the task itself is *changed* (Norman 1991). If we take this approach to the introduction of artefacts in general, we see that the different perspectives give us different views on issues of automation and the introduction of AI in industry. From one perspective, humans are empowered, but from the other the tasks are changed, and the actor may even feel diminished. What is interesting is that the capacity of AI may be said to have gone beyond the role of the cognitive artefacts here discussed. AI systems are often less of a help, or tool, for human actors, but more of an autonomous replacement.

Activity theory is a different approach to HCI, in which both of Norman's views are considered *personal* (Kaptelinin 1996). In activity theory, tools are seen to empower, and even *change*, the actor. Kaptelinin (1996) refers to studies that show that we often go through three phases when tools are used to assist us in tasks. First, we cannot effectively use to tool, so performance of the task is the same with or without the tool. In the second phase we perform better with the tool than without. The third phase is the most interesting, and that is when we can perform the original task better than before, even *without* the tool (Kaptelinin 1996). Using the tools actually changes us and teaches us new things. It empowers us. I will return to this possibility later on.

Penrose (1999) has discussed the fact that having machines that challenge us mentally is something different than them challenging us physically. While being relieved of physical

labour is welcomed, being challenged intellectually is worse, as thinking "has been a very human prerogative" (Penrose 1999, p. 66). The question that follows is one of superiority, as if "machines can one day excel us in that one important quality in which we have believed ourselves to be superior, shall we not then have surrendered that unique superiority to our creations" (Penrose 1999, p. 67)? Gillies (1996) discusses these issues and relates his discussion to debates in the decades preceding his book *Artificial intelligence and scientific method*. He relates, among other things, opinions that placed superiority in chess well beyond the scope of any future advances in AI. Writing in 1996, he himself states that "if the progress of the last twenty or so years continues, then it is not unlikely that, within a few decades, computer chess programs will exist which *no* human is capable of beating" (Gillies 1996, p. 117). As we have seen, *Deep Blue* beat Garry Kasparov in 1997. Similarly, Kurzweil (2015) predicts that "within several decades information-based technologies will encompass all human knowledge and proficiency, ultimately including the pattern-recognition powers, problems-solving skills, and emotional and moral intelligence of the human brain itself" (Kurzweil 2015, p. 148).

Without getting too technical, let us, for our current purposes, assume that superhuman intelligence in machines is a future possibility. Intellectual inferiority, then, and a potentially very troubled relationship with what we have made. Much like in Mary Shelly's *Frankenstein*, the things we make may come back to haunt us (Shelley 2003). Will the superintelligence Bostrøm (2014) discusses be our Frankenstein? Will it cause us grief as we watch it surpass us, or will we simply welcome these new entities that can perform ever more impressive tasks for us? We may, according to activity theory, view ourselves as *empovered*, and simply in need of a reorientation with regard to our relationship with our tools (Kaptelinin 1996).

The subtitle of Shelley's book is *The Modern Prometheus* (Shelley 2003). This is a reference to the Greek myth of the Titan Prometheus, who is credited with creating man from clay. In doing so, Prometheus steals fire from the gods and gives it to humans. This fire brings not only life to man but "also the subtler fire of reason and wisdom from which all aspects of human civilization is derived" (Raggio 1958). The gods were angry, however, and sent "fever and disease to the human race" while condemning Prometheus to torture (Raggio 1958). There are many variations of this myth, and perhaps modern man is living one of them, making new forms of life and giving them reason and wisdom. While reaching for that divine fire, we must hope we are not overreaching.

I will not go into much detail relating to the nature of consciousness or the cognition and mental lives of robots in this paper. Instead, I focus on what they can *do* and how *we* see and relate to them. But, what does all this mean for what it means to be human? Whatever goes on inside their "minds", smart robots change the way we relate to robots, and they also change the way we see ourselves. According to Goldberg (2009) this is a two-way deal, where much of our knowledge of the brain has been presented through computer analogies, while the computers we build are modelled on what we know of neurology and biology (Goldberg 2009, p. 279). Koestler thought that science was "dizzy with its own success" and "forgot to ask the pertinent questions"—questions that could not be answered "so long as one's image of man is that of a conditioned reflex-automaton" (Koestler 1967, p. xi-xii). Turkle (2011) proposes that this way of seeing humans may be promulgated by smart robots—creatures that we somehow identify with or liken to ourselves or other biological creatures. Returning to Koestler, the behaviourism he so intently criticised would be a good science for conflating human-machine working (Koestler 1967). With behaviourism, we "did away with the concept of mind and put in its place the conditioned-reflex chain" (Koestler 1967, p. 6).

How, then, do we understand ourselves in relation to these new entities—already smart, but potentially *very* smart in the not so distant future?

Are We Really Special?

Throughout human history, many attempts at answering the question of what makes human beings special have been made. What is it, for example, that separates man from animals? This question has given rise to many answers, among them that man is "a political animal (Aristotle); a laughing animal (Thomas Willis); a tool-making animal (Benjamin Franklin); a religious animal (Edmund Burke); and a cooking animal (James Boswell, anticipating Lévi-Strauss)" (Thomas 1983:31). First, we will have a brief look at the philosophical debate, before moving on to some psychological perspectives.

The Philosophical Debate

This debate has gotten new prominence today, as it is clearly relevant to the question of what intelligent machines *are*. If reason, for example, is what defines man, a computer that satisfies our definitions of rationality may be considered a man? Or, if our distaste for this conclusion is too strong, do we revise our definitions to exclude machines, or perhaps search for other defining aspects of humanity? Turkle (2011) describes this as happening when primitive robots started showing what appeared to be emotions. Man was previously defined as a *rational* animal, according to the Aristotelian method of focusing on exclusive characteristics. Then, when computers could not be denied rationality, we suddenly became *emotional* animals. Cole (1990) proposed that what sets humans apart is our ability to use artefacts to modify our environment and to transmit these modifications to subsequent humans through language. These conditions, too, can surely be fulfilled by smart computers.

Regardless of how we approach this issue, intelligent machines are clearly a challenge to the belief that we are special, or in some way superior to (all) other things. This challenge is less of a problem for those that do not adhere to some form of anthropocentrism. Many environmental philosophers, like Arne Næss, adamantly dethroned man and put him squarely on the level of the rest of the natural world—promoting *biospherical egalitarianism* as an alternative to anthropocentrism (Næss 1999). The biosphere does not include machines, though, so these philosophies will also have to be rethought if we are to deal adequately with the possible moral value of intelligent machines. As cybernetics and biotechnology continues to evolve, it will be even harder to exclude objects that are not what we traditionally consider *biotic* from moral consideration.

The philosophical debates relating to the issues of technology are often linked to the terms *transhumanism* and *posthumanism*. Transhumanism is mainly concerned with the possibility of *enhancing* humanity through, for example, "regenerative medicine to nanotechnology, radical life extension, mind uploading and cryonics, among other fields" (Ferrando 2013). Posthumanism is about the "decentering" of man and "raises serious questions as to the very structures of our shared identity—as humans—amidst the complexity of contemporary science, politics and international relations (Braidotti 2013, p. 2).

We may forge new rules that excludes machines by definition, but that does not preclude a possible identity crisis for humanity. What are we, when we are not the most intelligent or most powerful beings we know of? What are we, when some of us wants to be with their robots instead of other people? Our inferior physical power was most likely acknowledged as soon as

we reflected on the strength of the beasts we came across. This was perhaps not that much of a defeat, since we also realised that we were mentally superior. We could use our cunning to overcome physical disadvantage, and soon we ruled the earth. Ingenuity, intelligence, language and creativity made humans a "huge, dangerous and powerful" force, and the Earth now suddenly appears to be both small and fragile (Randers 2012).

Psychology and Humanity

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ARENA OF CHANGING

The Ghost in the Machine

Being Human in the Age of AI and Machine Learning

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11._ Gallery of AI-assisted projects.

ChatGPT

“Manufacture of Gynoid #3; Profiles”. Supra-Gender, ———series for this issue.
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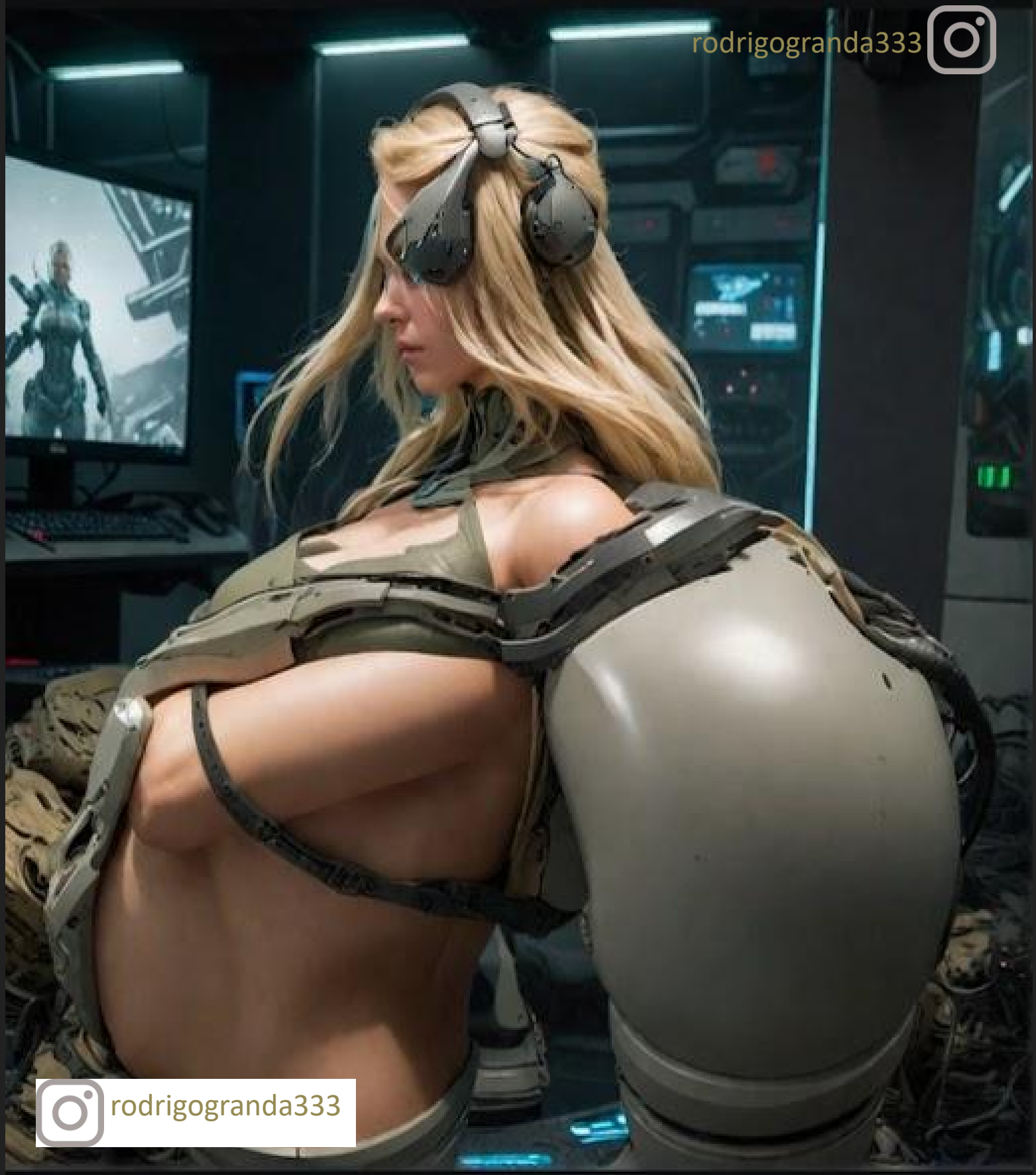

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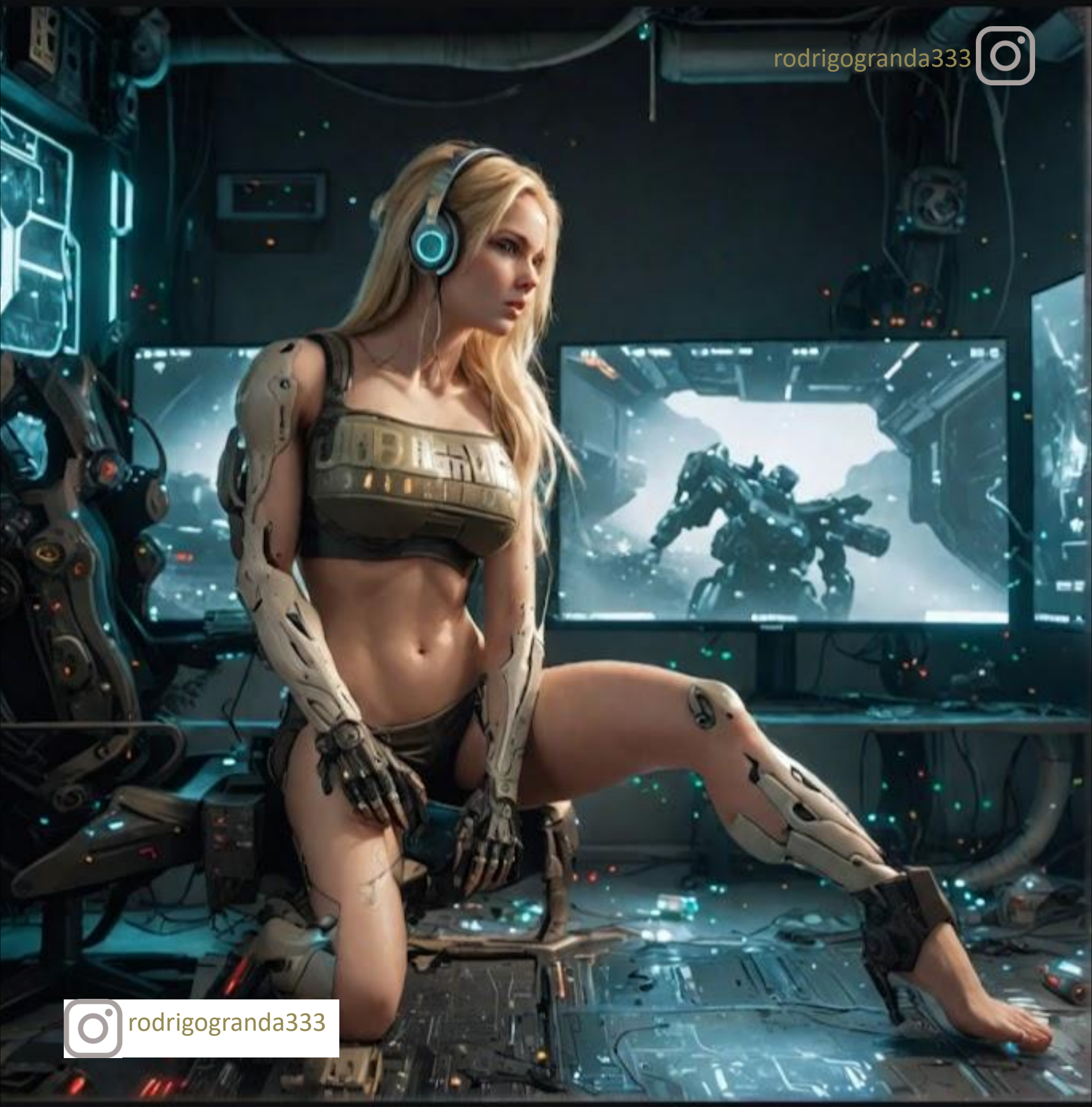

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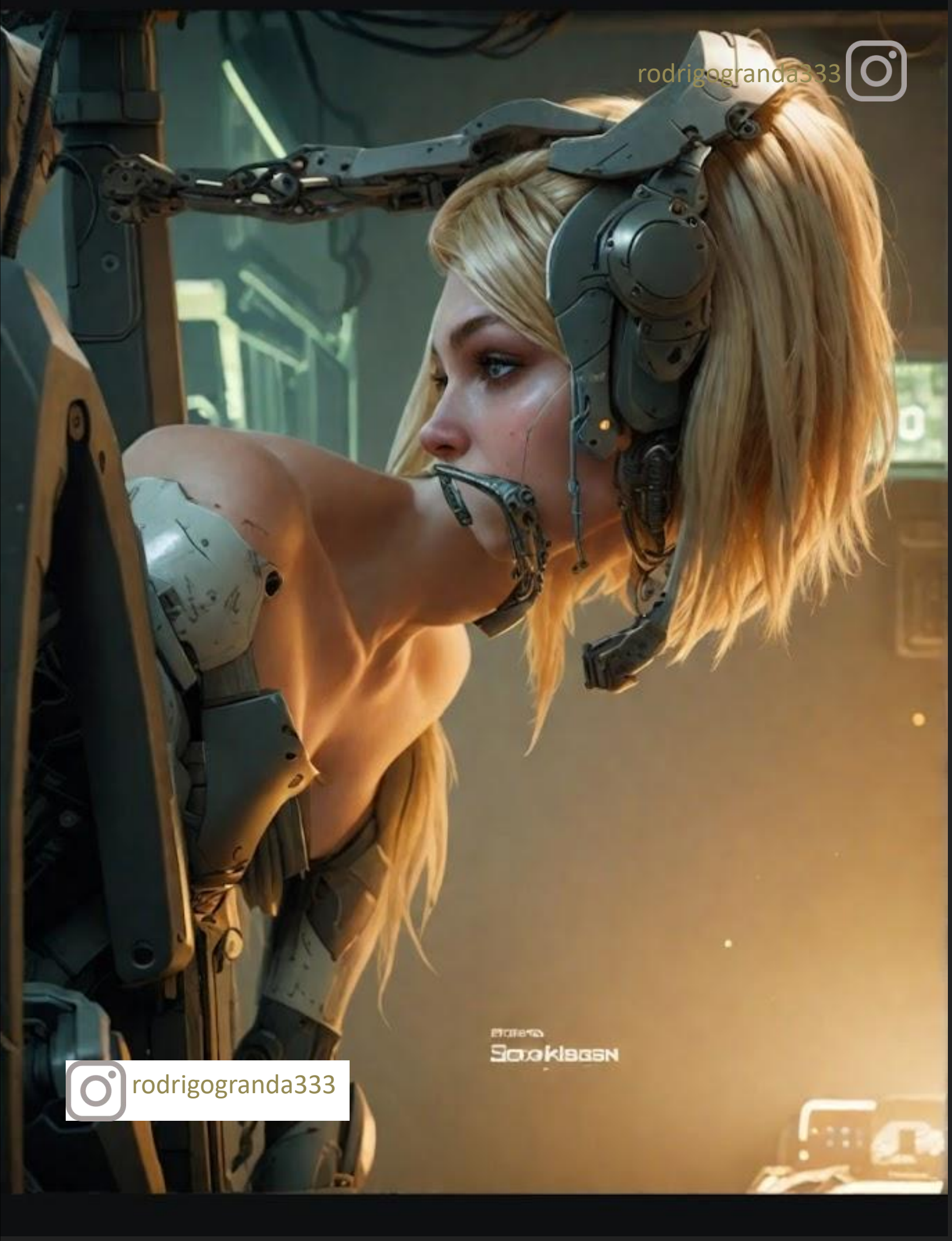

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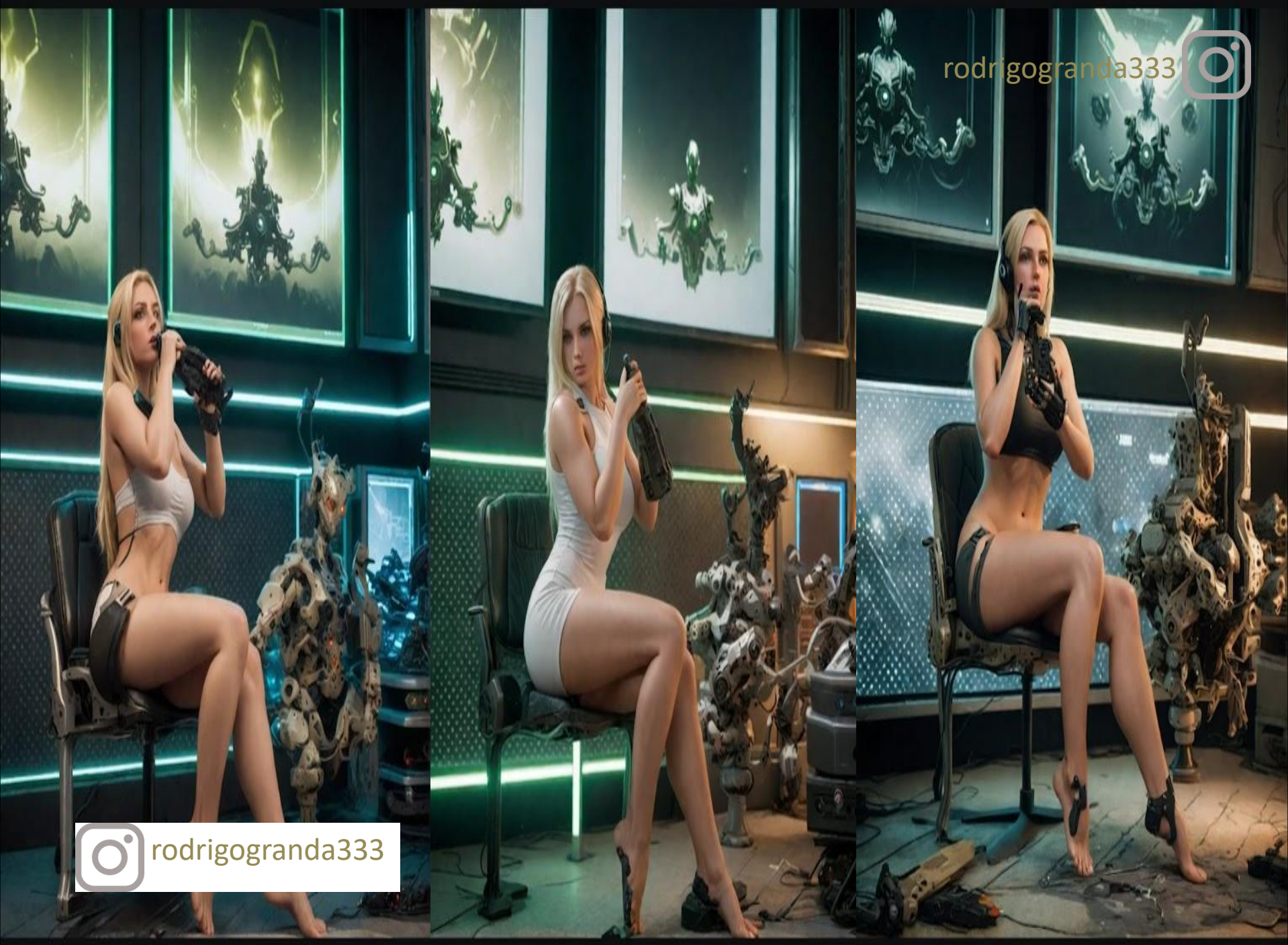

“Manufacture of Gynoid #13; personal assistants during their break time”.
Supra-Gender, ——series for this issue.
Photo by: Rodrigo Granda (artificial intelligence generated image)

“Manufacture of Gynoid #14; the mother superior”. Supra-Gender, ———series for this issue.
Photo by: Rodrigo Granda (artificial intelligence generated image)

“Manufacturing of Transgender Gynoid #8; transgender grandmother in chat room”. Supra-Gender, ———series for this issue.
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“Manufacturing of Transgender Gynoid #9; transgender grandmother in chat room”. Supra-Gender, ——series for this issue.
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“Manufacture of Gynoid #15; the mother superior”. Supra-Gender, ——series for this issue.
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“Manufacturing of Transgender Gynoid #10; transgender grandmother in chat room”. Supra-Gender, ——series for this issue.
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“Manufacture of Gynoid #16; the mother superior”. Supra-Gender, ——series for this issue.
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“Manufacture of Gynoid #18; the mother superior”. Supra-Gender, ——series for this issue.
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“Manufacture of Gynoid #19; the mother superior”. Supra-Gender, ——series for this issue.
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“Manufacture of Gynoid #20; the mother superior”. Supra-Gender, ——series for this issue.
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“Manufacture of Gynoid #22”. Supra-Gender, ———series for this issue.
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“Manufacture of Gynoid #23; the mother superior”. Supra-Gender, ——series for this issue.
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ChatGPT

“Manufacture of Gynoid #24; Staff Assistant”. Supra-Gender, ——series for this issue.
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“Manufacture of Gynoid #25; Staff Assistant”. Supra-Gender, ——series for this issue.
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“Manufacture of Gynoid #26; the mother superior”. Supra-Gender, ——series for this issue.
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12._Supra-
Gender

Supra-Gender

The prospect of loading our identity into a machine with multiple gender and sexuality.

While we are making remarkable strides in technologies that have the potential to transcend human limitations, many scientific, ethical, regulatory, and societal challenges remain. It is a time of rapid technological advancement, but whether this will lead to a true transcendence of human limitations depends on how these challenges are addressed and how these technologies are integrated into society.

—The Androgynous Creation: A Synthesis of Judaic and Greek Myths

The story of human creation, as recounted in religious texts, is a profound narrative that often grapples with the fundamental aspects of existence, identity, and companionship. In the Judaic tradition, Genesis 1:27 asserts, "So God created mankind in his own image, in the image of God he created them; male and female he created them." This passage, seemingly straightforward, unfolds into a complex discussion within Jewish thought, particularly when juxtaposed with the subsequent account in Genesis 2, leading to the interpretation of Adam as an androgynous being. This notion intriguingly aligns with the Greek myth of androgyny, as presented by Plato. The interplay between these narratives highlights a rich exchange of cultural and philosophical ideas, showcasing the fluid boundaries between distinct civilizations and their shared human quest for understanding.

Androgyny in Genesis: A Judaic Interpretation

In Judaic tradition, the first human, Adam, was initially created as an androgynous being, embodying both male and female aspects within a single entity. This interpretation emerges from the apparent contradiction between Genesis 1 and Genesis 2. In the first chapter, humanity is created simultaneously as male and female, suggesting an inherent unity. However, in the second chapter, Adam appears to be alone until God creates Eve from his side, prompting questions about the sequence and nature of their creation.

Rabbinic exegesis, particularly through the Midrash and commentators like Rashi, endeavors to reconcile these accounts. They propose that the initial creation was of a dual-faced being, which God later divided into two separate entities: Adam and Eve. This androgynous Adam underscores the intrinsic need for companionship, illustrating that self-sufficiency is an illusion and that completeness is achieved through unity with another.

Greek Mythology: The Androgynous Origins

Plato's "Symposium," written around 380 BCE, presents a myth narrated by Aristophanes, wherein humans were originally created as three types: male, female, and androgynous. These beings were spherical, with four arms, four legs, and two faces. Their strength and audacity led them to challenge the gods, who, fearing their power, split them in half, thus creating the longing each half feels for its missing counterpart.

This myth explains the origins of love and desire as the pursuit of one's other half, aiming to restore the original unity. The androgynous beings, split into male and female, seek to reunite and regain their wholeness, reflecting a profound understanding of human connection and the search for completeness.

Judaic Adoption and Adaptation

The Jewish tradition, while drawing boundaries to maintain its distinct theological identity, has historically been permeable to external influences, including Greek thought. The adoption of the androgynous creation myth into rabbinic literature serves to harmonize the dual creation narratives in Genesis. This synthesis is evident in the Talmud and Midrash, where rabbis interpret the first human as a dual-faced being, echoing the Platonic myth but with a distinct monotheistic framing.

For instance, the Talmudic interpretation describes Adam HaRishon (the first Adam) as having two faces, which God later split into man and woman. This adaptation allows for a coherent explanation of the Genesis accounts, emphasizing that the separation was necessary for humans to experience companionship and love fully. The concept of "one flesh," as mentioned in Genesis 2:24, is thus understood not merely as a metaphor but as a return to the original androgynous unity.

The Concept of Soulmates

The notion of soulmates, integral to the Platonic myth, finds a place in Jewish thought as well. The Talmudic assertion that "forty days before the formation of the fetus, a voice announces, 'the daughter of so-and-so is destined for so-and-so,'" suggests a divine orchestration of pairings, reminiscent of the Greek idea of searching for one's other half. However, in Jewish tradition, this pairing is seen as a divine decree rather than an intrinsic human endeavor.

Legal Implications of Androgyny in Jewish Law

While Greek thought relegates androgyny to the realm of myth, Jewish law incorporates the concept more pragmatically. The Mishnah and Talmud recognize the existence of androgynous individuals, considering them a distinct category with specific legal implications. This acknowledgment reflects a nuanced understanding of gender and sexuality, extending beyond the binary framework and addressing practical legal concerns.

For example, the Tosefta discusses the obligations of androgynous individuals in religious practices, recognizing their unique status and adapting the law accordingly. This legal recognition underscores the inclusivity and adaptability of Jewish law in addressing diverse human conditions.

Conclusion

The integration of the androgynous creation myth from Greek to Judaic tradition illustrates a fascinating cultural and philosophical exchange. The rabbinic reinterpretation of Genesis through the lens of androgyny not only resolves textual contradictions but also enriches the understanding of human nature and relationships. This synthesis of ideas highlights the permeability of cultural boundaries and the shared human endeavor to make sense of existence, love, and identity. Through this interplay, Judaism demonstrates its ability to absorb and transform external influences, weaving them into its own rich tapestry of belief and practice.

—The Biological Imperative of Sexual Reproduction

Sexual reproduction is a cornerstone of biological diversity and evolutionary resilience. Although it may seem inefficient at first glance, the complex dance between male and female genetic material offers critical advantages that asexual reproduction cannot match. By exploring the nuances of sexual and asexual reproduction through examples from the natural world, we can better understand the evolutionary significance of sex.

Sexual Autonomy in Asexual Organisms

In nature, there are fascinating examples of organisms that reproduce without sexual partners. The Bdelloidea, a class of microscopic rotifers, exemplifies this phenomenon. These tiny creatures, found in any moist environment, reproduce exclusively through parthenogenesis, a process where females produce offspring from unfertilized eggs. Despite the apparent efficiency of this method, asexual reproduction carries significant risks. Chris Wilson of Imperial College London points out that genetic uniformity in asexual populations makes them highly susceptible to diseases. A pathogen can rapidly devastate a population because all individuals share the same genetic vulnerabilities.

Interestingly, Bdelloidea have developed a remarkable survival strategy to counter this vulnerability: desiccation. By drying out completely, they can evade infections that would otherwise annihilate them. This ability has allowed them to thrive for over 50 million years, far outlasting most other asexual organisms, which typically only persist for a few hundred thousand years before succumbing to disease.

Partenogenesis: The Case of Ganas

Another compelling example of asexual reproduction is found in Ganas, a Komodo dragon at the London Zoo. Ganas was born through parthenogenesis, a rare process where females reproduce without male fertilization, producing only male offspring. While this method of reproduction is fascinating, it highlights a fundamental inefficiency in asexual reproduction as pointed out by the geneticist John Maynard-Smith. He argued that producing males, who cannot directly reproduce, seems to waste 50% of reproductive resources.

The Evolutionary Enigma of Sexual Reproduction

Aoife McLysaght from Trinity College Dublin notes that sexual reproduction presents an evolutionary puzzle. Despite its apparent inefficiency—since each parent only passes on half of their genes—it remains prevalent across the animal kingdom. The key lies in the genetic variation it introduces. Sexual reproduction combines the DNA of two parents, creating offspring with unique genetic makeup. This genetic diversity is crucial for the adaptability and survival of a species.

Sexual reproduction allows for the mixing of beneficial mutations and the potential elimination of harmful ones. Each individual carries around 60 new mutations not inherited from their parents, contributing to genetic diversity. This diversity enhances resilience against diseases and environmental changes, offering a clear advantage over the genetic uniformity of asexual reproduction.

The Benefits of Genetic Diversity

The benefits of sexual reproduction become evident when considering the genetic makeup of populations. In asexual reproduction, all offspring are genetic clones of the parent, inheriting any weaknesses. In contrast, sexual reproduction shuffles genetic material, increasing the chances of combining beneficial traits and eliminating detrimental ones. This genetic shuffling creates a population more resistant to diseases and environmental changes, enhancing overall fitness and survival.

For instance, a population with varied genetic backgrounds is less likely to be wiped out by a single pathogen, as not all individuals will share the same vulnerabilities. This genetic diversity is a powerful defense mechanism against the constant threat of diseases and parasites, highlighting the evolutionary advantage of sexual reproduction.

Conclusion

The existence of sexes in biology is more than a mere quirk of evolution; it is a fundamental strategy for ensuring the survival and adaptability of species. While asexual reproduction offers certain efficiencies, its inherent genetic uniformity leaves populations vulnerable to extinction. Sexual reproduction, with its blend of genetic materials, fosters resilience and diversity, enabling species to thrive in an ever-changing environment. Thus, the intricate dance of sexual reproduction, despite its inefficiencies, proves to be a cornerstone of life's evolutionary success.

—True Hermaphroditism and Cystic Teratoma as Part of Human Evolution?

The intricate and multifaceted nature of sexual development is a testament to the complexity of human biology. Among the many variations in sexual differentiation, true hermaphroditism and cystic teratomas represent unique aspects of this spectrum, challenging conventional understandings of sex and gender. True hermaphroditism, characterized by the presence of both ovarian and testicular tissue within the same individual, and cystic teratomas, a type of tumor that can contain tissues from all three germ layers, are rare phenomena that highlight the diversity of human development.

Understanding Disorders of Sexual Development

Disorders of Sexual Development (DSD) encompass a range of conditions where there is a discordance between chromosomal, gonadal, and phenotypic sex. The term DSD has replaced the older term "intersexuality," providing a more precise framework for understanding these conditions. DSDs often result in ambiguous genitalia and can be classified into several categories: female pseudohermaphroditism (presence of two ovaries), male pseudohermaphroditism (presence of two testes), true hermaphroditism (presence of both ovarian and testicular tissues), gonadal dysgenesis (rudimentary gonads), and pure gonadal dysgenesis (both gonads rudimentary).

True hermaphroditism constitutes less than 10% of all DSDs, occurring in approximately 1 in 20,000 births. Despite over 400 reported cases in medical literature, the majority of instances are sporadic, though familial cases do occur. Individuals with true hermaphroditism possess both ovarian follicles and testicular tubules, and their external genitalia are typically atypical. The degree of masculinization depends on the amount of functional testicular tissue present, and these patients have a 2.6–4.6% risk of developing gonadal neoplasia, particularly in the presence of a Y chromosome.

Historical and Mythological Context

The term "hermaphroditism" is derived from the mythological figure Hermaphroditus, the child of Aphrodite and Hermes. In Greek mythology, Hermaphroditus was a beautiful youth who was merged with the nymph Salmacis, resulting in a being with both male and female characteristics. This mythological background underscores the deep historical roots and cultural significance of hermaphroditism, reflecting humanity's longstanding fascination with the fluidity of sex and gender.

Anatomical and Genetic Characteristics

True hermaphroditism is a rare condition involving the presence of both ovarian and testicular tissues in the same individual. The anatomy can vary, with cases classified as bilateral (both gonads are ovotestes), unilateral complete (one ovotestis and one ovary), unilateral incomplete (one ovotestis), or alternate (one ovary and one testis). This condition is distinct from other genital malformations due to a clear aberration in the endocrine cascade responsible for fetal genital development. Such disruptions can lead to life-threatening metabolic imbalances, inappropriate physical changes during puberty, gender identity confusion, and potential malignancies.

Patients with true hermaphroditism generally have normal intelligence and a good life expectancy, although a small percentage are at risk for gonadal tumors, particularly in the presence of a Y chromosome. The most common tumors are germ cell tumors and dysgerminomas. Chromosomal analysis, or karyotyping, helps define the chromosomal sex of the patient, with 46XX being the most common, followed by mosaicism (46XX/46XY) and the less frequent 46XY karyotype. The presence of testicular tissue in 46XX individuals is often due to the hidden presence of the SRY gene, which is crucial for testicular differentiation.

Endocrine Disruptions and Diagnostic Tools

The phenotype of patients with DSDs is usually the result of disruptions in the endocrine cascade that affects the development of the Müllerian or Wolffian ducts. Müllerian ducts typically develop into female structures (fallopian tubes, uterus, upper vagina), while Wolffian ducts develop into male structures (epididymis, vas deferens, seminal vesicle). The production of anti-Müllerian hormone (AMH) by Sertoli cells causes regression of the Müllerian ducts, while testosterone and its metabolite dihydrotestosterone (DHT) drive the development of Wolffian ducts. Abnormalities in hormone production can result in the persistence of structures from both ducts. Ultrasound, genitogram, and MRI are used to detect Müllerian structures.

Congenital Adrenal Hyperplasia (CAH)

CAH, particularly due to 21-hydroxylase deficiency, is a major cause of ambiguous genitalia. It results from mutations in enzymes involved in cortisol production, leading to elevated levels of 17-hydroxyprogesterone (17-OHP) and subsequent masculinization of female genitalia. Prenatal diagnosis can be made via amniocentesis and measurement of 17-OHP levels, while postnatal diagnosis involves blood tests and genetic analysis.

Comprehensive Treatment Approach

Managing true hermaphroditism requires a multidisciplinary approach, encompassing medical, surgical, and psychosocial interventions. For patients with salt-wasting nephropathy, medical treatment is essential to address life-threatening conditions. Surgical recommendations include early gonadectomy, especially in cases with Y chromosome components, to mitigate the risk of malignancy. The timing of gender assignment or reassignment surgery remains contentious, reflecting the complexities of gender identity and the potential for gender dysphoria, where individuals feel "trapped in a body that does not match their sex."

In conclusion, true hermaphroditism and cystic teratomas, though rare, offer profound insights into human sexual development and the evolutionary intricacies of our species. These conditions underscore the necessity of a nuanced understanding of sex and gender, moving beyond binary classifications to appreciate the full spectrum of human diversity.

—Hermaphroditism and Intersexuality: Understanding the Differences

The terms "hermaphroditism" and "intersexuality" are often used interchangeably, but they represent distinct concepts. This distinction is crucial for understanding the biological and social implications of these conditions. While hermaphroditism refers primarily to certain animals and plants, intersexuality pertains specifically to humans and encompasses a broader range of biological variations.

Defining Hermaphroditism and Intersexuality

Hermaphroditism describes organisms that possess reproductive organs typically associated with both male and female sexes. These organisms have mixed reproductive systems capable of producing both male (sperm) and female (eggs) gametes. In contrast, intersexuality in humans refers to biological variations in sexual characteristics that do not fit typical binary notions of male or female bodies. Intersex individuals might have discrepancies between their chromosomal sex, gonadal structures, and external genitalia.

The United Nations (UN) defines intersex individuals as those born with sex characteristics, such as genitals, gonads, or chromosome patterns, that do not align with conventional definitions of male or female bodies. These variations are natural and can manifest at birth, during puberty, or even later in life. The World Health Organization (WHO) estimates that intersex individuals make up about 1% of the global population.

Reproductive Capabilities: A Key Difference

One significant distinction between hermaphroditism and intersexuality is reproductive capability. Hermaphrodites in the animal and plant kingdoms can produce both eggs and sperm simultaneously, allowing for self-fertilization or cross-fertilization. However, intersex individuals may not be fertile. The ability to reproduce is a critical factor that separates these two conditions fundamentally.

Types of Intersex Variations

Intersexuality includes a wide array of variations based on differences in genotype and phenotype. The main types include:

1. XX Intersex: Individuals have female chromosomes (XX) but present with male external genitalia.
2. XY Intersex: Individuals have male chromosomes (XY) but exhibit female or ambiguous external genitalia.
3. True Gonadal Intersex: Both ovarian and testicular tissues are present, with external genitalia that can be male, female, or ambiguous.
4. Complex or Indeterminate Intersex: There are hormonal or chromosomal variations without a clear discrepancy between genotype and phenotype.

Psychological Support and Societal Challenges

Intersex variations do not inherently cause pain or discomfort. However, the societal emphasis on a binary understanding of gender can lead to confusion, rejection, and psychological distress for intersex individuals. Psychological support is crucial for both the individuals and their families to navigate these challenges, often more so than medical or surgical interventions.

The societal pressure to conform to binary gender norms often influences the decision to undergo invasive and irreversible surgeries, usually on minors or infants, without their consent. These surgeries can result in sterility, pain, incontinence, loss of sexual sensation, and depression. Therefore, it is imperative that any surgical interventions are carried out only with the informed, voluntary consent of the individual.

Distinguishing Gender Identity and Sexual Orientation

Intersexuality is about biological sex characteristics and does not relate to a person’s sexual orientation or gender identity. An intersex person can be heterosexual, homosexual, bisexual, or asexual and can identify as male, female, both, or neither. The emphasis should be on the individual's self-identified gender, which may not align with societal expectations based on their physical attributes.

Conclusion

The distinctions between hermaphroditism and intersexuality are vital for appreciating the complexity and diversity of human biology. Recognizing that intersexuality involves a range of natural variations in sex characteristics can foster a more inclusive and understanding society. Providing psychological support and ensuring informed consent for medical procedures are crucial steps towards respecting the rights and identities of intersex individuals. By moving beyond binary classifications, society can better support and accept individuals for who they are, promoting a more inclusive and compassionate world.

—Will We Reach a Third Sex? The Potential of Transhumanism

by Rodrigo Granda

In the animal kingdom, various species exhibit hermaphroditism, possessing both male and female reproductive organs. This phenomenon is seen in worms, snails, starfish, and over 20 families of small fish. Hermaphroditism allows these organisms to produce both male and female gametes, facilitating reproduction in environments where finding a mate might be challenging. In fungi, for example, the difficulty in finding a mate has led to the evolution of multiple mating types to increase reproductive success and genetic propagation. This unique adaptation raises an intriguing question: could transhumanism pave the way for more than two sexes in humans?

- ## The Biological Challenge and Potential Solutions

- Traditional biology and chemistry, prior to the technological revolution in programming languages, have established two sexes as the norm, making it difficult for a third sex to emerge and thrive. The introduction of a new sex, facilitated by genetic engineering, might require assistance from artificial intelligence for successful reproduction. With established mechanisms for males and females to maximize their reproductive success, a third sex would need to integrate seamlessly into this system. This third sex, envisioned as a "supragender," could potentially reproduce alone or with either male or female partners, increasing its chances of finding a mate.

- ## The Role of Gamete Size in Sexual Differentiation

- One reason humans and other complex animals have evolved two sexes is the difference in gamete size. Rutherford's research highlights that human eggs are the largest cells, while sperm are the smallest. These differences create distinct biological imperatives for males and females: sperm are designed for speed and mobility, while eggs are large and stable, providing a secure environment for fertilization and early development. This complementary relationship between sperm and egg, likened to a lock and key, has historically negated the need for additional sexes.

- ## Transhumanism and the Supragender Concept

- Advances in DNA and RNA technology, however, open new possibilities. As we have already modified plants and animals, humans represent the next frontier for transformation into an advanced biological and mechanical organism, termed "supragender." This concept envisions a new type of being, capable of reproducing independently or with existing sexes, challenging traditional biological constraints.

- The Implications of a Third Sex

- Introducing a third sex would revolutionize our understanding of reproduction and genetic diversity. A supragender could combine the stability of female gametes with the speed of male gametes, potentially offering unique adaptive advantages. Moreover, it could address reproductive challenges, such as infertility or genetic diseases, by expanding the genetic pool and creating new pathways for genetic diversity.

- However, the ethical and social implications of creating a new sex cannot be overlooked. The integration of a supragender into human society would require careful consideration of identity, rights, and societal norms. It would challenge existing notions of gender and reproduction, necessitating a reevaluation of legal and ethical frameworks.

- Conclusion

- The idea of a third sex, facilitated by transhumanism, represents a bold step in the evolution of human reproduction. While the biological challenge is significant, advances in genetic engineering and artificial intelligence provide promising avenues for overcoming these obstacles. The creation of a supragender could enhance genetic diversity and offer new solutions to reproductive challenges, heralding a new era in human evolution. As we stand on the brink of this transformative possibility, it is crucial to navigate the scientific, ethical, and social dimensions with care and foresight.

Epoch 0, Volume 0, September 23, 2023

Supra- Gender: The prospect of loading our identity into a machine with multiple gender and sexuality.

Kali-TRANSHUMAN. ANARCHO JOURNAL OF RADICAL Possibilities

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der
berühmtesten
Philosophen und Alchymisten

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Dritter Theil.

Nürnberg,
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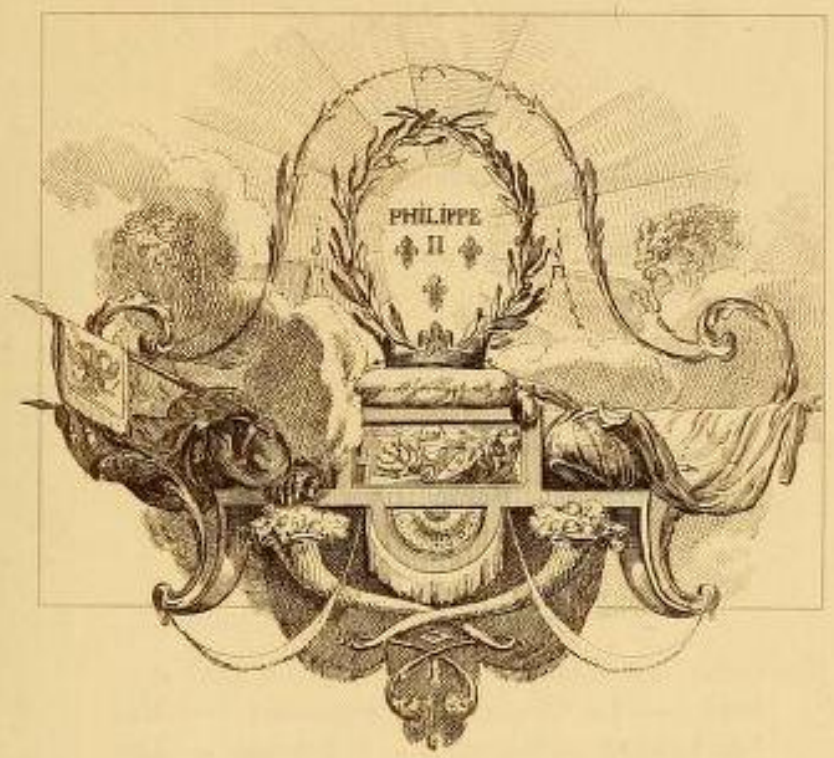

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All the models in the gallery for the proposal have been generated with the assistance of artificial intelligence.

All images of books and articles consulted on the internet are property of the authors and publishers.

Rodrigo Granda: A Multifaceted Visionary in Transhumanism

Rodrigo Granda is an influential figure known for his diverse roles as a Phaneinthymos, encompassing identities such as bibliophile, digital artist, creative writer, and transhumanist. His eclectic interests and expertise embody a forward-thinking approach to human evolution and the integration of technology with biological and artistic expression.

Bibliophile

As a bibliophile, Rodrigo Granda has a profound love for books and literature. This passion for reading fuels his intellectual curiosity and informs his understanding of various disciplines, including science, philosophy, and the arts. Granda's extensive reading habit helps him draw connections between seemingly disparate fields, enriching his work and thought processes.

Digital Artist

In the realm of digital art, Rodrigo Granda leverages technology to create innovative and thought-provoking pieces. His work often explores themes of human augmentation and the blending of organic and synthetic elements. Through his digital creations, Granda envisions the future of humanity and the potential of merging biological and technological advancements.

Creative Writer

As a creative writer, Rodrigo Granda crafts narratives that push the boundaries of conventional storytelling. His writing often delves into speculative fiction and explores transhumanist themes, questioning what it means to be human in an age of rapid technological progress. His stories are not only entertaining but also serve as philosophical inquiries into the nature of identity, consciousness, and evolution.

Transhumanist

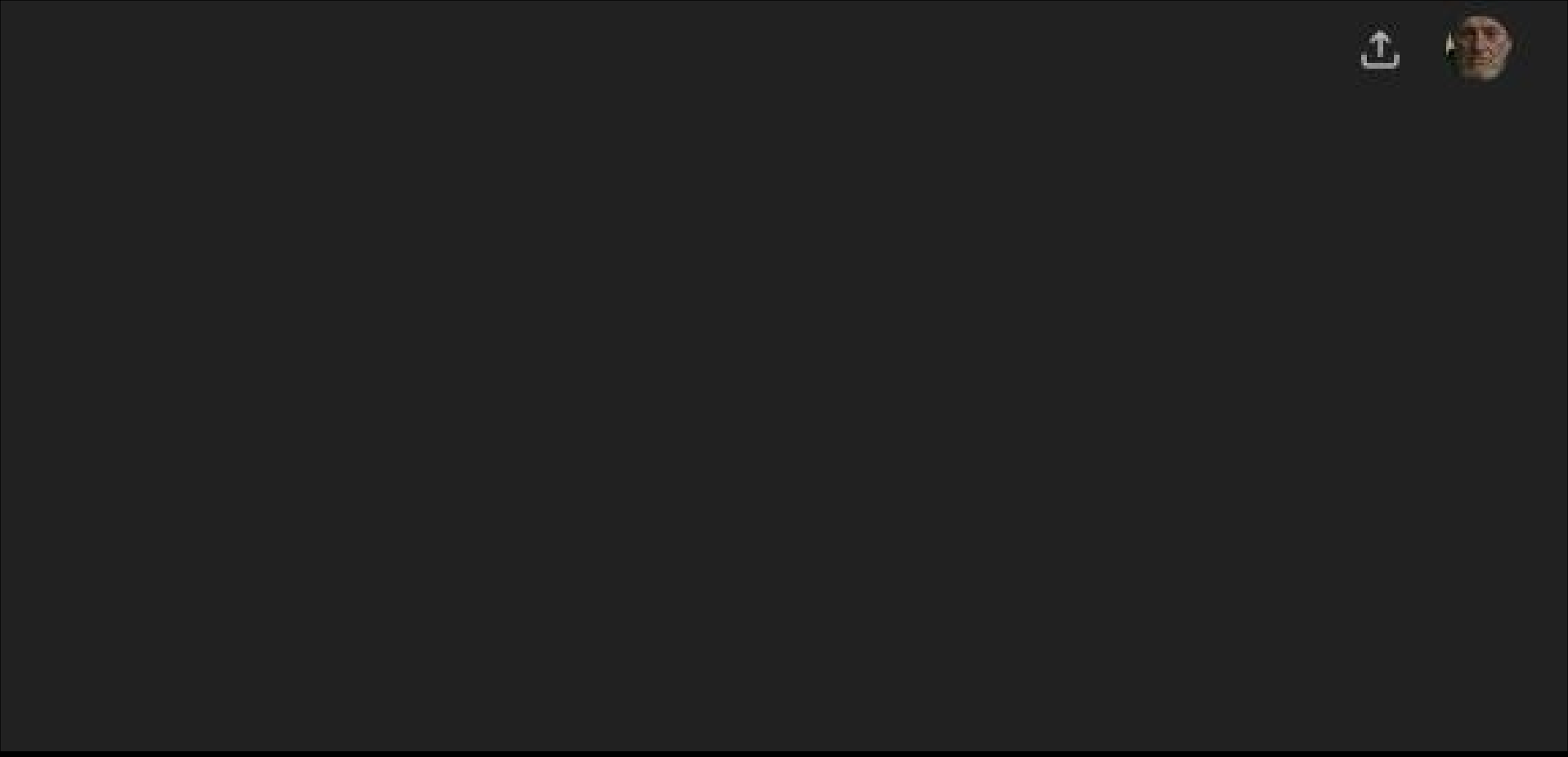
Granda's transhumanist philosophy advocates for the enhancement of human capabilities through advanced technologies. He envisions a future where humanity transcends its biological limitations by integrating with technology, thereby achieving greater intelligence, longevity, and overall well-being. His work as a transhumanist involves both theoretical exploration and practical advocacy for technologies that can improve human life.

Phaneinthymos

The term "Phaneinthymos" itself is a unique identifier that encapsulates Granda's multifaceted persona. It suggests a being that exists at the intersection of intellectual pursuit, artistic creation, and technological innovation. This title reflects his holistic approach to life and his commitment to advancing human knowledge and capabilities.

Conclusion

Rodrigo Granda stands out as a visionary whose work spans multiple disciplines, each informing and enriching the other. His dedication to literature, digital art, creative writing, and transhumanism positions him at the forefront of contemporary thought and innovation. Through his diverse endeavors, Granda not only explores the future of humanity but also actively shapes it, offering insights and creations that inspire and challenge the boundaries of what is possible.



Saturday, September 23, 2023

"I thank you for taking the time to view my various online editions, which are available free of charge with the intention of motivating other personalities who are in search of emotional healing."

Sincerely yours:

Rodrigo ✯ Granda

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